

Final Report

Eastgate Preliminary Screening Analysis

Project # 20090069

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Prepared for:



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Overview and Caveats

Potential growth or changes to land use in the Eastgate I-90 corridor will likely be constrained by transportation capacity and the City's fiscal ability to fund new infrastructure. Before launching the Eastgate/I-90 Land Use and Transportation Project in 2010, staff undertook a "stress test" of the Eastgate roadway network to assess the present and potential future transportation choke points and whether relatively affordable solutions could be developed to support any appreciable land use change. Neither the land use scenario nor the transportation concepts in the screening analysis are intended to forecast the outcomes of the Eastgate/I-90 Land Use and Transportation Project.

The Eastgate Preliminary Screening Analysis is a rough initial study conducted principally to inform project staff before the full launch of the Eastgate/I-90 Land Use and Transportation Project. The screening analysis has the following significant caveats:

- The assumed land use was intentionally ambitious to assess whether a high amount of growth could even be accommodated in the area by 2030 without significant transportation impacts. This scenario may not be consistent with the formal land use alternatives developed later in this project.
- The growth assumed in the report has not been confirmed by any independent market/economic analysis, and may (and likely will) be different from future amounts of growth that will be assumed for the area as a result of the Eastgate/I-90 Land Use and Transportation Project as it evolves during 2010. It is also not based on any proposed zoning pattern for the area, but was assumed only for the purposes of identifying transportation impacts.
- Transportation solutions discussed in this study are not intended to be a complete set. Moreover, these ideas are at a very early conceptual stage. Because no topographic surveys were completed for this planning study, the concept layouts may not be exact in terms of position relative to right-of-way. As such, project ideas and costs will likely evolve substantially if they are studied further.

The Eastgate/I-90 Land Use and Transportation Project will consider a 2030 planning horizon and evaluate potential land use changes for the corridor, including those that may increase commercial and/or mixed use potential and that are supported by multi-modal transportation options. The ultimate project outcomes will unfold from further study and the public process to occur with the launch of the project in 2010.

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INTRODUCTION AND PROJECT PURPOSE

A number of significant changes have occurred in the Eastgate area since completion of the Eastgate/I-90 Corridor Study in 2003, including construction of the Eastgate Park-and-Ride expansion, direct access ramps to 142nd Place SE, expansion of Bellevue College, new commercial and office development, and transit service revisions. The Eastgate/ I-90 Corridor Study had a planning horizon of 2020.

Per previous Council direction, staff is preparing to embark on an evaluation of land use and transportation planning policies and regulations in the Eastgate/I-90 commercial corridor, one of the City's major employment centers. This evaluation will result in a Plan update with a 2030 time horizon that will build on this gateway area's assets of accessibility, visibility, job diversity, and stable nearby residential neighborhoods. The Plan will provide a more coherent identity for this area, improving its economic vitality and character, while ensuring the area has an adequate transportation infrastructure and services to meet changing land use and community needs.



Eastgate Park and Ride Garage and I-90 Direct Access Ramps

Before launching the Eastgate/I-90 Land Use and Transportation Project in 2010, staff undertook a “stress test” of the Eastgate roadway network to assess the present and potential future transportation choke points and whether relatively affordable solutions could be developed to support any appreciable land use change. Neither the land use scenario nor the transportation concepts in the screening analysis are intended to forecast the outcomes of the Eastgate/I-90 Land Use and Transportation Project (herein referred to as Mixed Use Employment Center Study). The Preliminary Screening Analysis includes two general tasks.

- **Task 1 – Develop 2030 Model:** The development of the 2030 BKR travel demand model was completed in-house by the City of Bellevue. The model was updated to add short-term funded projects (included in the City's 6-year CIP and 12-year TFP) and committed regional improvements. This version of the model was used for the 2030 No Action (Base) alternative. An Action (2030 Modified) alternative was prepared using updated land uses by Traffic Analysis Zone (TAZ) to reflect potential increases in office and mixed-use development within the Eastgate area, in addition to the transportation projects included in the No Action alternative.
- **Task 2 – Evaluate Alternatives:** Perteet obtained 2030 BKR model outputs for the No Action and 2030 Modified Land Use Alternatives from the City, reviewed them, and used them to conduct traffic operations analysis (using Synchro) and to prepare transportation recommendations. This task involved three key steps:

- Step one was to analyze the traffic operations at ten intersections, for both alternatives, for the AM and PM peak periods (using Synchro). Potential optimization strategies were identified for the intersections based on the analysis.
- Step two was an analysis of transit needs/strategies for both alternatives. Transit, vanpool, rideshare, and Transportation Demand Management (TDM) strategies were assessed.
- Step three was the development of order-of-magnitude cost estimates for each optimization and transit improvement strategy. Cost estimates are based on general parameters for similar projects in other areas.

Study Area

The study area is generally bounded by I-405 on the west, SE 24th Street on the north, 168th Avenue SE on the east, and SE Newport Way on the south, as shown in **Exhibit 1**. The project study area includes portions of the Eastgate, Factoria, and Richards Valley subareas. The major focus of this project is the commercial office area fronting I-90, one of the City's major employment centers.

Existing Land Use Character

The predominant land use in the northeast portion of the study area (north of I-90) is suburban office park, one to three stories tall, surrounded by landscaped surface parking. Two large auto dealerships are located in a commercial strip between 148th and 156th Avenues (north of I-90) along with smaller commercial properties. Bellevue College is located west of 148th Avenue, in the north-central part of the study area. It is the third largest institution of higher education in the state. Adjacent to the college campus on its southern edge is the Eastgate Park and Ride lot at 142nd Avenue. The northwest portion of the study area includes one of the City's only remaining light industrial areas, home to a King County waste transfer station, a Puget Sound Energy electrical substation, and a number of manufacturing, repair, and storage businesses.

On the south side of I-90, commercial uses predominate in the study area, including a community shopping center (grocery, drug store, etc.), office complexes, and retail uses including a large auto dealership. Single family residential development is located just behind the commercial development near the freeway, and south of I-90 the residential use remains in unincorporated King County. The City anticipates a separate annexation study of this area. The Factoria commercial area borders the study area on the southwest. (The Factoria Area Transportation Study was completed in April 2005.) T-Mobile's national headquarters is located in the Newport Corporate Center, in the eastern part of Factoria.

The Eastgate area developed in an auto-oriented fashion because of its proximity to I-90. The area is changing due to the proximity of an expanding major college, increasing employment, a major transit facility, and improved transit service. These changes offer an opportunity to develop a more walkable, higher density, mixed-use environment with a well-connected roadway, non-motorized and transit network.

Key Issues

Pertteet and the City of Bellevue have identified a number of issues within the Eastgate corridor, as described below.

- **Congestion along 150th Avenue SE:** The intersections at 150th Avenue SE / SE 37th Street (Intersection 227), and 150th Avenue SE / SE 38th Street (Intersection 174) are poorly configured. These two signalized intersections are in close proximity to each other. Traffic coming from the west along SE 38th Street destined further east (either to I-90 or East Bellevue) must turn left (northbound) onto 150th Avenue SE, and turn east onto SE 37th Street. A significant amount of traffic makes this movement to access I-90 eastbound, because there is not an eastbound ramp to I-90 in Factoria. This movement creates a bottleneck along SE 37th Street, and on 150th Avenue SE.
- **Congestion south of I-90:** Congestion occurs along the south side of I-90 near the interchange with 150th Avenue SE, and at SE 38th Street during the PM peak. At this location, the eastbound on-ramp often backs traffic to the intersection with 150th Avenue SE, especially when the I-90 traffic flow is heavy toward Issaquah. This constrains access to the Albertson's center and the commercial and residential neighborhoods to the east and north, which depend on the tunnel under I-90. There is little arterial continuity on the south of I-90. A potential long term solution may involve creating a more continuous collector-distributor road along the south side of I-90 to Newport Way, creating a longer merge lane along the south side of the freeway, or an additional outside eastbound lane on the freeway.
- **Congestion along 142nd Place SE:** During the PM peak, the SE 142nd Place SE overcrossing is heavily congested. The bridge provides transit, pedestrian and general vehicle access to the Eastgate Park-and-Ride, the I-90 HOV lanes, and Bellevue College on the north side. The congestion occurs at the HOV direct access ramp terminals when vehicles attempt turns and crossings are blocked by heavy pedestrian traffic. The signals at the HOV ramp terminals and at SE 142nd / SE 36th Street are not coordinated despite their close proximity, and buses have difficulty negotiating southbound to westbound right turns.
- **Street network lacks continuity:** Traffic operations at several locations in the study area are compromised by a "one-way in and one-way out" design. Today, businesses located north of SE 36th Street between Richards Road and 139th Avenue SE (TAZ 114) primarily use Richards Road to access I-90 or other areas. SE 30th Street and SE 32nd Street currently dead-end, and businesses along these two roads must gain all access from Richards Road. This adds to congestion at the intersection of Richards Road/SE Eastgate Way (Intersection 105) for vehicle coming to or from the south. Today, businesses located east of 156th Avenue SE, north of Eastgate Way (TAZ 122) have limited access points, primarily 158th Avenue SE or 160th Avenue SE. Both of these

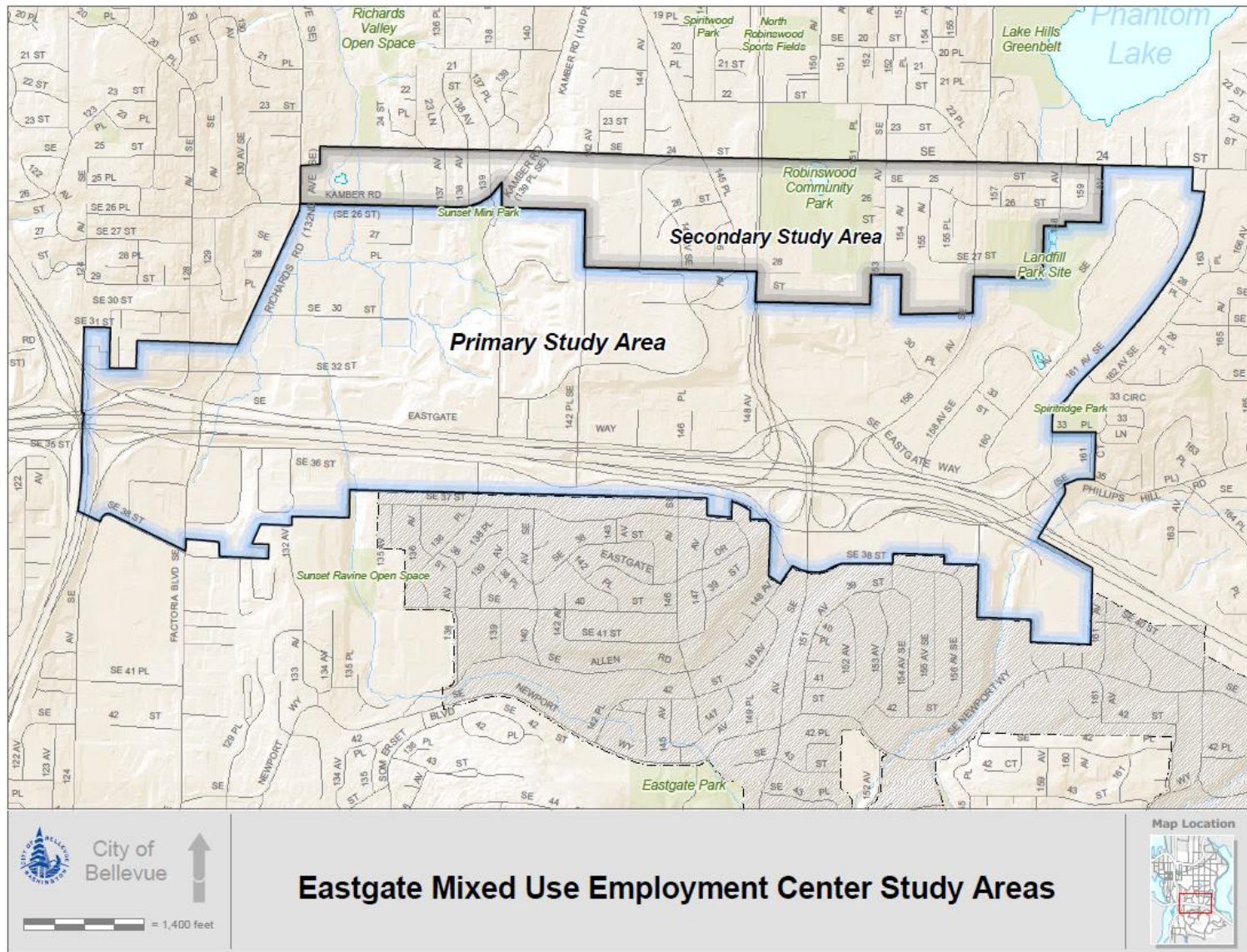
roads only connect to Eastgate Way, thus all traffic accessing this business area is funneled to Eastgate Way. This adds to congestion at the intersections along Eastgate Way, including 156th Avenue SE/Eastgate Way (Intersection 86), and 150th Avenue SE/Eastgate Way (Intersection 101).

- **Pedestrian and bicycle crossing issues over I-90:** Limited freeway crossing points for local traffic result in out-of-direction travel for many cross freeway trips and heavy vehicular traffic at the available crossings, which can make it unpleasant for pedestrians and cyclists. The existing crossings are located at SE 35th Place (the tunnel); the grade separated non-motorized crossing parallel to 148th /150th Avenues SE, SE 142nd Place SE, and at Factoria Boulevard SE / Richards Road.
- **Mountains to Sound Greenway:** The Mountains to Sound Greenway (MTSG) stretches along 100 miles of Interstate 90 in Washington State from the waterfront in Seattle to the edge of desert grasslands in Central Washington. The MTSG through the Eastgate area is inadequate as a regional trail. While it is signed as a route, the signs can be difficult to follow, and many trail users get lost. Even experienced users are dissatisfied with the traffic exposure, the busy and wide intersections they must negotiate, and the steep terrain.
- **Pedestrian and bicycle crossing issues at intersections:** A primary concern is pedestrian and bicycle access and safety across Factoria Boulevard at SE 36th Street. A current issue for bicyclists traveling westbound on SE 36th Street is that they have difficulty maneuvering to the I-90 trail on the west side of Factoria Boulevard. Intersection crossing issues for pedestrians and cyclists are also experienced at Eastgate Way / 150th Avenue SE (Intersection 101).
- **Off-peak transit service lacking:** In general, the southeastern portion of the City of Bellevue, which includes the project study area, remains relatively underserved, particularly during off-peak weekday and during Saturday and Sunday periods. During weekday off-peak periods and weekends, no transit service is provided along 161st Avenue SE, along 156th Avenue SE south of Lake Hills Boulevard or along much of 140th Avenue between the Lake Hills Connector and Northup Way.
- **Transit Stops and shelters missing:** On both sides of I-90, the transit stops on both Eastgate Way and SE 36th Street need improved pedestrian access, shelters and seating. Sidewalks are lacking along the freeway side on both sides of the freeway.
- **Transit Routing through Bellevue College:** Bus routes serving Bellevue College operate a very circuitous routing through the historic core of the campus, which includes multiple speed bumps, hindering bus movements. The existing route through the campus goes between a major new multi-story parking structure and a building entry which contributes heavy pedestrian crossing volumes throughout the day, delaying bus

movements. It recommended that the speed bumps be cut to accommodate the width of emergency fire equipment to enable swifter response. These cuts can also accommodate bus traffic allowing a freer flowing movement of bus service. In addition to the modification of speed bumps, buses could operate a more direct routing from the Eastgate Park and Ride via 142nd Avenue SE and 142nd Place SE, Snoqualmie River Road, Kelsey Creek Road to SE 24th Street (Routes 221-245-271 and 926). In addition, bus stops in both directions would need to be added at the intersection of 142nd Place SE & Kelsey Creek Road, while eliminating the stops at Tyee River Road & Kelsey Creek Road and at Landerholm Circle SE & SE 28th Street. An additional mid-route stop along Snoqualmie River Road should be considered to provide quicker pedestrian access to housing and campus facilities.

- **Transit effectiveness compromised by transportation barriers:** It is very difficult to operate efficient and direct transit services to the array of destinations in the Eastgate area due to the freeway and the limited street network. Buses have very limited crossing points over I-90 yet major development is planned for both sides of the freeway. The current network of local and commuter routes provide direct service from most communities north of I-90, from Issaquah, Mercer Island and downtown Seattle. There is minimal local service from the Factoria and Somerset areas south of I-90 to Eastgate. It is nearly impossible to provide effective transit service from the various communities to all of the Eastgate and Factoria area destinations with a one-seat ride (without a transfer).
- **Transit effectiveness compromised by land use barriers:** Because of its cul-de-sac access and egress, direct service into the I-90 Business Park via existing transit routes passing near the development is undesirable due to the travel time penalties imposed on existing through riders. To generate improved transit ridership will require the development of well-marked, hard-surfaced pedestrian trails from the business park connecting with other trails in the area and to bus stops along adjacent city roadways. Such improvements must also include improved pedestrian path signage, directing pedestrians to nearby bus stops, improved waiting facilities at existing stops adjacent to the business park development, low-level lighting along pedestrian paths and some provision to protect pedestrians from the elements during inclement weather.
- **Employment areas not being served by transit:** The employment center along the north side of I- 90 just east of 156th Avenue now includes the new Advanta Microsoft campus, with three 7-story buildings. Transit service exists only along the Eastgate Way frontage, well over a quarter mile away. A much shorter walk distance would be available from the 156th Avenue side, where service should also be considered.

Exhibit 1: Eastgate Preliminary Screening Analysis Study Area



PROPOSED 2030 ALTERNATIVES

The preliminary screening of the Eastgate Mixed Use Employment Center Study involves an analysis of a 2030 No Action (or Base) Alternative and a 2030 Modified Land Use Alternative developed by the City of Bellevue. **Exhibit 2** shows the land use by year/alternative for the entire Eastgate study area. **Exhibit 3** shows the land uses allocated by TAZ. The table includes only those TAZs that will change under the 2030 Modified alternative.

2008 (Existing) Land Uses

The Eastgate area today has a mixture of office, institutional, residential and commercial uses. **Exhibit 3** shows the existing land use in 2008 for all Traffic Analysis Zones (TAZs) within the study area. The only proposed land use change for the Modified alternative is increased office development, institutional, hotel and multi-family. For that reason, the table does not include retail, industrial or single family uses, as there is no planned change between today and 2030 under the Modified alternative.

2030 Base Alternative

By 2030, under the current zoning, it is anticipated that there will be growth in office, institutional, multi-family residential, and hotel land uses. As shown in **Exhibit 3**, the greatest land use growth is attributed to office space. Under the 2030 Base Alternative, it is anticipated that there will be nearly 6 million square feet of office space within the study area, or slightly more than 1 million square feet of additional office space over existing conditions. The majority of this office space growth will occur within TAZ 122.

2030 Modified Alternative

Under the Modified alternative, an additional 1.8 million square feet of office space is proposed over the 2030 Base Alternative. This office growth will occur in three TAZs, including TAZ 114, 117, and 122 as shown in **Exhibits 4 and 5**. In addition, a growth of 280,000 square feet of institutional use is proposed for TAZ 116 (Bellevue College campus). An additional 1,000 total multi-family dwelling units are proposed within TAZs 116 (200 units), 117 (200 units), 122 (400 units), and 145 (200 units). Finally, a total of 400 additional hotel units are proposed over the 2030 Base Alternative, including 200 rooms in TAZ 123, and 200 rooms in TAZ 157. These hotel rooms would likely be concentrated adjacent to the I-90 corridor.

Exhibit 2: Eastgate Area Alternative Land Uses

All TAZs	OFFICE (Sq. Ft.)	INSTITUTION (Sq. Ft.)	MFDU (Units)	HOTEL (Rooms)
2008 Conditions	4,950,618	1,115,480	1,373	655
2030 Base Alternative	5,956,849	1,181,036	1,482	975
Growth (2008-2030 Base)	1,016,231	65,556	109	320
2030 Modified Alternative	7,756,849	1,461,036	2,482	1,375
Growth (2008-2030 Modified)	2,806,231	345,556	1,109	720
Growth (2030 Base-2030 Modified)	1,800,000	280,000	1,000	400

Exhibit 3: Land Use changes by TAZ

TAZ	FORECAST YEAR	OFFICE (Sq. Ft.)	INSTITUTION (Sq. Ft.)	MFDU No. Units	HOTEL No. Rooms
114	2008	191,504	50,150	0	0
	2030 Base	191,504	50,150	0	0
	2030 Modified	791,504	50,150	0	0
	Difference (Modified over Base)	600,000	0	0	0
116	2008	216,276	652,860	359	0
	2030	242,287	718,416	359	0
	2030 Modified	242,287	998,416	559	0
	Difference (Modified over Base)	0	280,000	200	0
117	2008	346,654	89,037	0	181
	2030 Base	357,774	89,037	0	341
	2030 Modified	1,157,774	89,037	200	341
	Difference (Modified over Base)	800,000	0	200	0
122	2008	1,027,270	0	4	240
	2030 Base	1,655,160	0	4	240
	2030 Modified	2,055,160	0	404	240
	Difference (Modified over Base)	400,000	0	400	0
123	2008	0	0	256	0
	2030 Base	0	0	256	0
	2030 Modified	0	0	256	200
	Difference (Modified over Base)	0	0	0	200
145	2008	0	4,745	0	0
	2030 Base	23,170	4,745	0	0
	2030 Modified	23,170	4,745	200	0
	Difference (Modified over Base)	0	0	200	0
157	2008	97,870	39,764	52	126
	2030 Base	191,750	39,764	52	126
	2030 Modified	191,750	39,764	52	326
	Difference (Modified over Base)	0	0	0	200
Total Growth (Modified over Base)		1,800,000	280,000	1,000	400

Alternative Land Use Discrepancies

The initial modeling for Eastgate is based on 2008 existing, 2030 baseline and 2030 modified land use inputs. These are expressed in square feet by use, hotel rooms, and housing units by type (see Exhibits 2 and 3). The preliminary land use changes from 2030 baseline to 2030 modified are focused in TAZs 114, 116, 117, 122, 123, 145, and 157. During the conversion from square feet of job-producing uses in the 2030 baseline to 2030 modified scenarios to jobs (as used in the transportation model), there were a few isolated overestimates and underestimates at the individual TAZ level. In aggregate, these account for an underestimate of roughly 2,000 jobs in the 2030 baseline and 1,000 jobs in the 2030 modified scenario. This is

out of a total of roughly 26,000 jobs in the entire Eastgate Corridor in the 2030 baseline and 32,600 jobs in a 2030 modified scenario.

On an individual TAZ basis, the noteworthy overestimates/underestimates are as follows:

- TAZ 116: Underestimate of 1,617 jobs in *2030 baseline* and 1,537 in *2030 modified*;
- TAZ 122: Underestimate of 774 jobs in *2030 baseline* and 534 in *2030 modified*;
- TAZ 114: Overestimate of 80 Jobs in *2030 baseline* and 440 Jobs in *2030 modified*; and
- TAZ 117: Overestimate of 147 Jobs in *2030 baseline* and 627 Jobs in *2030 modified*.

Based on the transportation modeling results in this report, these identified land use discrepancies appear to have a relatively small impact on future traffic conditions in and around the affected TAZs. Future Eastgate transportation modeling inputs will better reflect land use changes associated with different scenarios.

Exhibit 4: 2030 Modified Land Use Alternative – Office and Institutional Growth

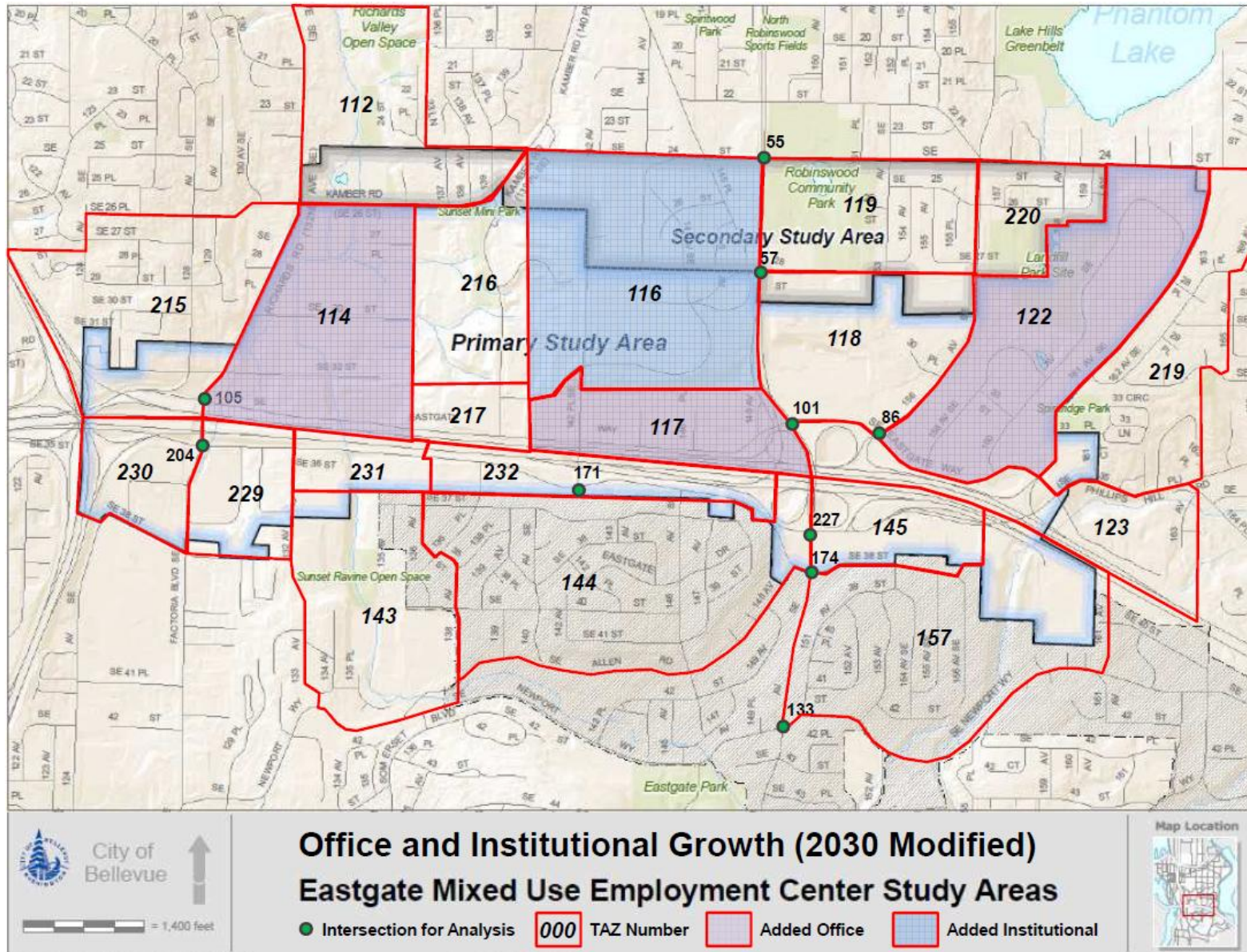
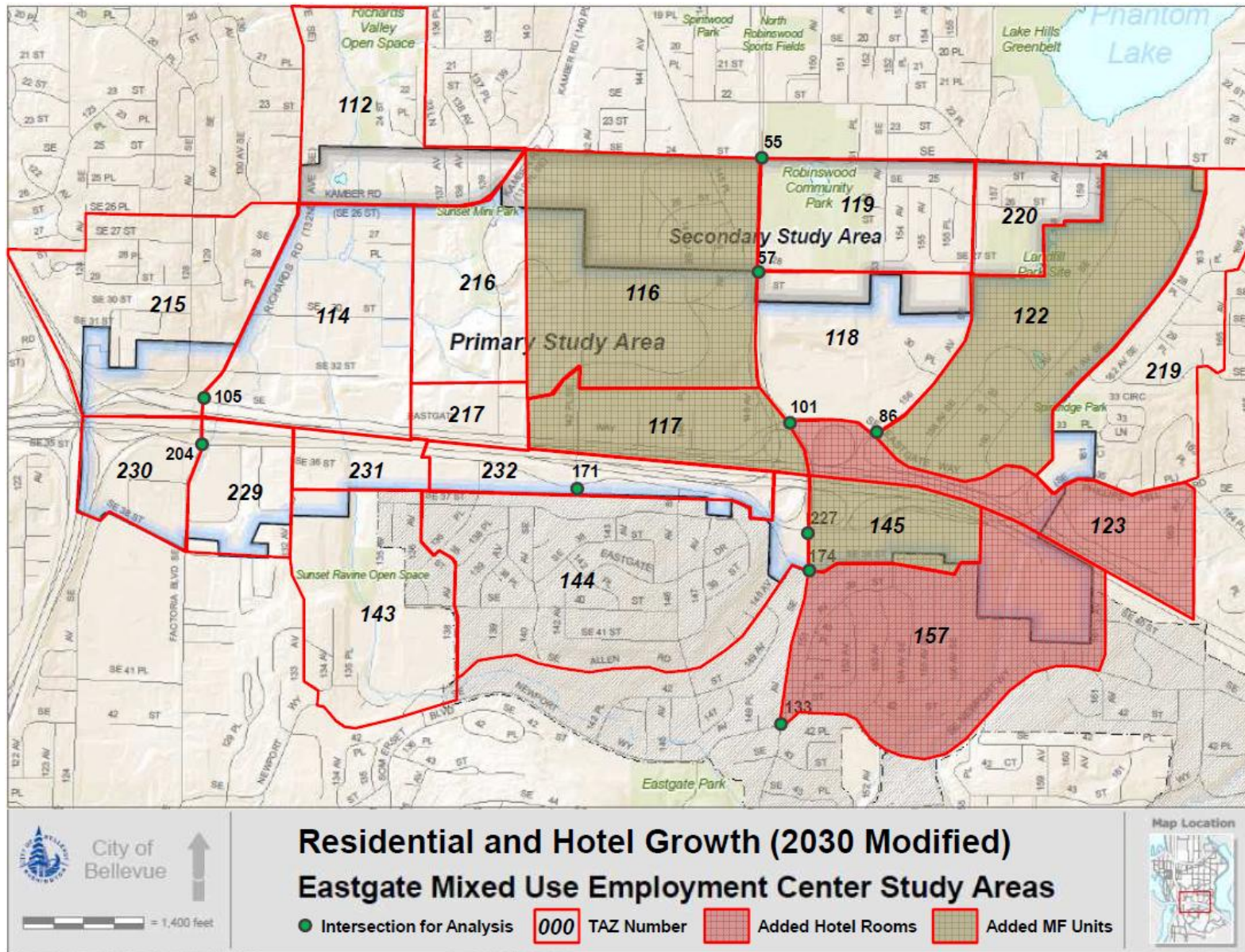


Exhibit 5: 2030 Modified Land Use Alternative – Residential and Hotel Growth



BACKGROUND / PREVIOUS REPORTS

A first step in identifying potential improvements was to review all existing or prior studies that have included project recommendations within the Eastgate area. There are programmed Eastgate area projects that are already included in the City's 6-year Capital Investment Program (CIP), and 12-year Transportation Facilities Plan (TFP). These projects are included in the updated 2030 BKR model.

In addition to the programmed projects, there are a significant number of non-programmed projects already identified within the Eastgate study area. These projects were recommended in various planning studies conducted by the City or other agencies. The following studies were used to identify current non-programmed projects:

- 148th Avenue Mobility Improvement Package, City of Bellevue, 2003
- Bellevue Transit Plan, City of Bellevue, 2002
- Eastgate / I-90 Corridor Study, City of Bellevue, 2003
- Factoria Area Transportation Study (FATS) Update, City of Bellevue, 2005
- Bellevue College Master Plan, Bellevue College, 2008
- I-90 Corridor Study, WSDOT, 2009
- Bellevue ITS Master Plan, City of Bellevue, 2004
- Bellevue Pedestrian and Bicycle Master Plan Update, City of Bellevue, 2009
- Bus Rapid Transit (BRT) Assessment and Traffic Optimization Analysis for East Bellevue, City of Bellevue, 2009

All programmed and non-programmed projects within the Eastgate study area are shown in **Appendix A**.

TRAFFIC OPERATIONS IMPACTS OF 2030 ALTERNATIVES

2030 BKR Model Update

The City of Bellevue updated the City's Bellevue-Kirkland-Redmond (BKR) travel demand model (which uses an EMME 3 software) to develop a platform to perform 2030 transportation analysis in Synchro. The land use projections and transportation network assumptions were used to update the model for both the 2030 Base Alternative and 2030 Modified Land Use alternative. The update includes planned and programmed transportation system improvements as identified in Bellevue's 2009-2015 Capital Investment Program (CIP) and 2009-2020 Transportation Facilities Plan (TFP). These projects are shown in **Appendix A**. In addition, local and regional bus transit improvements programmed by Metro and/or Sound Transit under current operational plans were added, as well as regional transportation network assumptions. Projects recommended in the WSDOT I-90 Bellevue to North Bend Corridor Study were not added to the model because they have not yet been funded. Therefore, it is unsure to what extent those projects will benefit the Eastgate area under the two 2030 land use alternatives. The City will continue to examine those project recommendations as a separate process.

The BKR model update includes potential land use development scenarios for the Eastgate area, including the 2030 Base and 2030 Modified Land Use alternatives. The City analyzed existing PSRC forecasts for the Eastgate/ I-90 area (that are part of the PSRC's small area forecasts) and identified changes within the Eastgate TAZs for the 2030 analysis.

The updated BKR model forecast for the 2030 Base and 2030 Modified Land Use alternatives included intersection volumes and levels of service. City staff prepared model runs of the land use alternatives using the four-step procedure of trip generation, distribution, mode choice, and assignment. For the 2030 Base, the forecasts assumed that no action is taken to change land uses or to improve transportation facilities beyond those committed by the city in its current capital improvement program. For the 2030 Modified Land Use alternative, the land use assumptions are consistent with those as shown in **Exhibit 3**.

The updated BKR Model output includes both volume/capacity (v/c) Level of Service, seconds of delay, and delay level of service for the 2008 (Existing), 2030 Base, and 2030 Modified Land Use alternative, for AM and PM peak periods. The results of the output were used to get a preliminary indication of which intersections or corridors will have operational impacts under the 2030 alternatives.

Exhibits 6 and 7 show results for intersections where there were Level of Service (LOS) issues. They display intersection LOS and delay for the 2030 Base and 2030 Modified land use alternatives, for both AM and PM peak hours. These intersections were chosen by the project team to be further analyzed using Synchro operational analysis software (see below).

Synchro Model Results

Based on the results of the BKR model output, the following intersections were chosen for additional Synchro analysis.

- Intersection 55 – 148th Avenue SE / SE 24th Street
- Intersection 57 – 148th Avenue SE / SE 28th Street
- Intersection 86 – 156th Avenue SE / SE Eastgate Way
- Intersection 101 – 150th Avenue SE / SE Eastgate Way
- Intersection 105 – Richards Road / SE Eastgate Way
- Intersection 133 – 150th Avenue SE / SE Newport Way
- Intersection 171 – 142nd Avenue SE / SE 36th Street
- Intersection 174 – 150th Avenue SE / SE 38th Street
- Intersection 204 – Factoria Boulevard / SE / SE 36th Street
- Intersection 227 – 150th Avenue SE / I-90 EB Off-ramp

Exhibits 8 thru 17 show the Synchro model results for the ten intersections, for existing, 2030 Base, and 2030 Modified Land Use alternatives, for both AM and PM peak hours. The tables display intersection levels of service and queue lengths. It is important to note that under the 2030 alternatives, the Synchro modeling effort included an initial assumption of optimizing all of the signals at all studied intersections.

Exhibit 18 provides a summary of the LOS and delay of all alternatives combined.

Exhibit 6: BKR Model Results - 2030 Alternatives AM Peak Hour

Int #	Address	Cycle (Secs)	2030 Original				2030 Modified			
			V/C	V/C LOS	Delay (Secs)	Delay (LOS)	V/C	V/C LOS	Delay (Secs)	Delay (LOS)
55	148th Ave SE/SE 24th St**	140	0.929	E+	29	C*	0.928	E+	29	C*
57	148th Ave SE/SE 28th St	140	0.904	E+	18	B	0.939	E+	24	C
86	156th Ave SE/ SE Eastgate Way	140	0.717	C	40	D	0.913	E+	54	D
101	150th Ave SE/ SE Eastgate Way	140	0.848	D+	56	E	1.105	F	69	E+
105	Richards Rd/SE Eastgate Way	140	0.739	C	34	C	0.776	C	34	C
133	150th Ave SE/SE Newport Way	140	0.613	B	49	D	0.623	B	50	D
171	142nd Ave SE/SE 36th St	140	0.841	D+	43	D	0.893	D-	47	D
174	150th Ave SE/SE 38th St	140	0.69	B	39	D	0.725	C	42	D
204	Factoria Blvd/SE 36th St	140	0.857	D-	57	E	0.901	E+	54	D
227	150th Ave SE/ I-90 EB Off-Ramp	140	0.462	A	43	D	0.521	A	43	D

*Indicates one or more movements overly saturated

**Intersection 55 - V/C, Delay, and LOS as shown is incorrect due to code errors in the BKR Model identified by Perteeet

Exhibit 7: BKR Model Results - 2030 Alternatives PM Peak Hour

Int #	Address	Cycle (Secs)	2030 Original				2030 Modified			
			V/C	V/C LOS	Delay (Secs)	Delay (LOS)	V/C	V/C LOS	Delay (Secs)	Delay (LOS)
55	148th Ave SE/SE 24th St**	140	0.926	E+	21	C*	0.991	E-	32	C*
57	148th Ave SE/SE 28th St	140	0.7	C	13	B	0.753	C	15	B
86	156th Ave SE/ SE Eastgate Way	140	0.769	C	54	D	0.892	D-	61	E
101	150th Ave SE/ SE Eastgate Way	140	1.053	F	61	E*	1.104	F	81	F
105	Richards Rd/SE Eastgate Way	140	0.788	C	40	D	0.821	D+	42	D
133	150th Ave SE/SE Newport Way	140	0.897	D-	48	D	0.916	E+	48	D
171	142nd Ave SE/SE 36th St	140	0.74	C	38	D	0.816	D+	42	D
174	150th Ave SE/SE 38th St	140	0.79	C	44	D	0.901	D-	33	C
204	Factoria Blvd/SE 36th St	140	1.044	F	77	E*	1.072	F	84	F*
227	150th Ave SE/ I-90 EB Off-Ramp	140	1.069	F	82	F*	1.161	F	111	F*

*Indicates one or more movements overly saturated

**Intersection 55 - V/C, Delay and LOS as shown is incorrect due to code errors in the BKR Model identified by Perteeet

Exhibit 8: 2030 Original (Base) Land Use Alternative - AM Peak Hour Level of Service (Synchro Model)

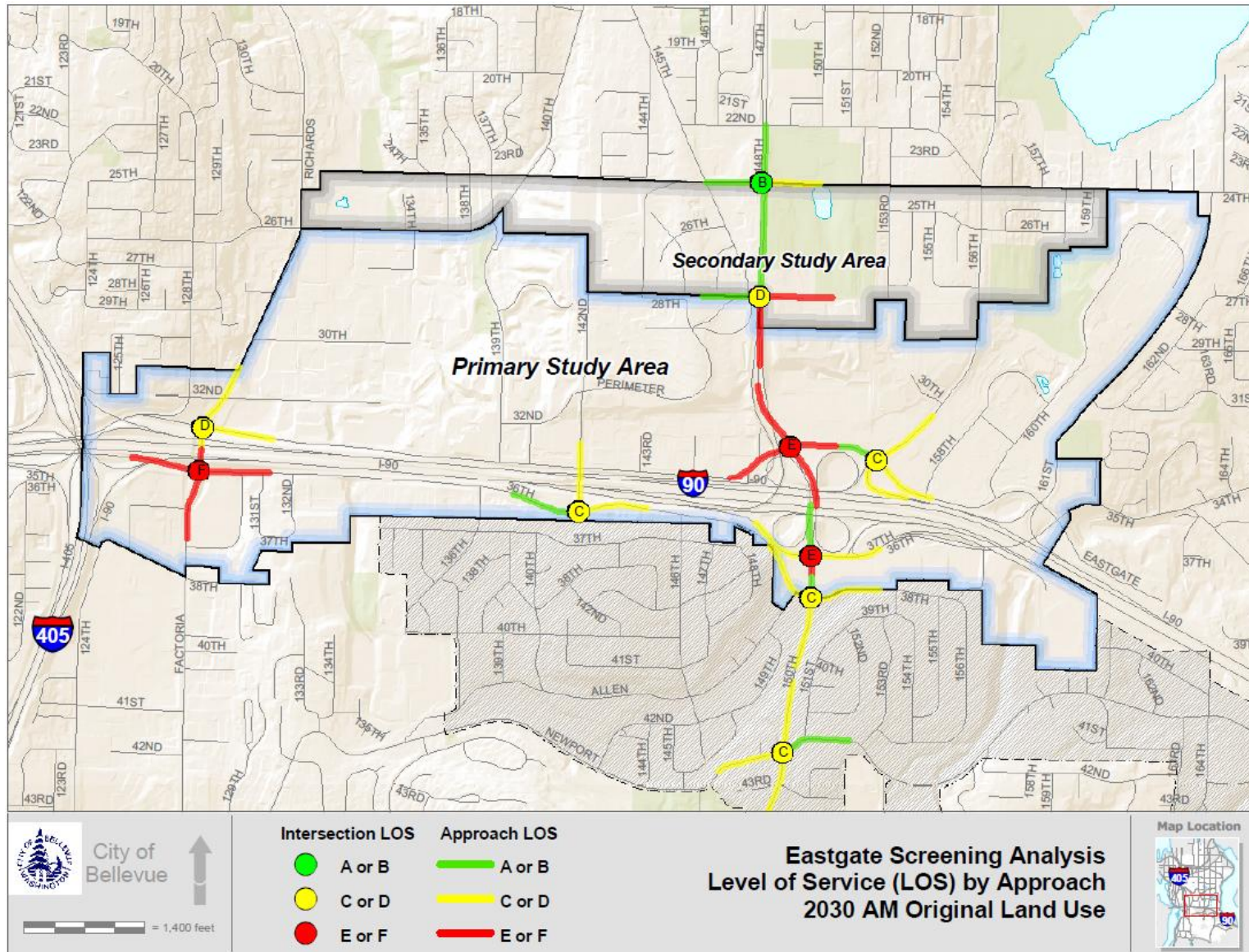


Exhibit 9: 2030 Original (Base) Land Use Alternative - PM Peak Hour Level of Service (Synchro Model)

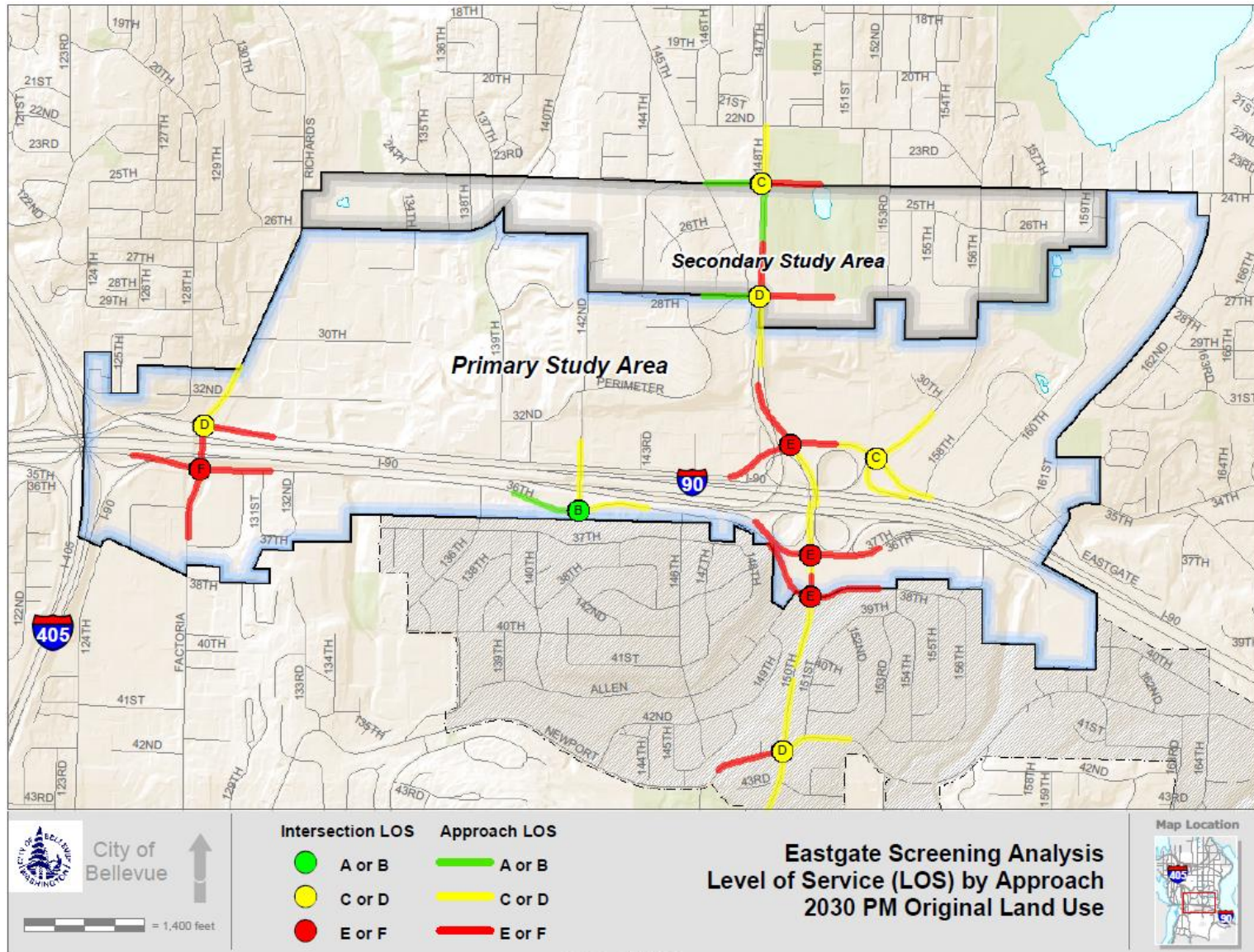


Exhibit 10: 2030 Modified Land Use Alternative - AM Peak Hour Level of Service (Synchro Model)

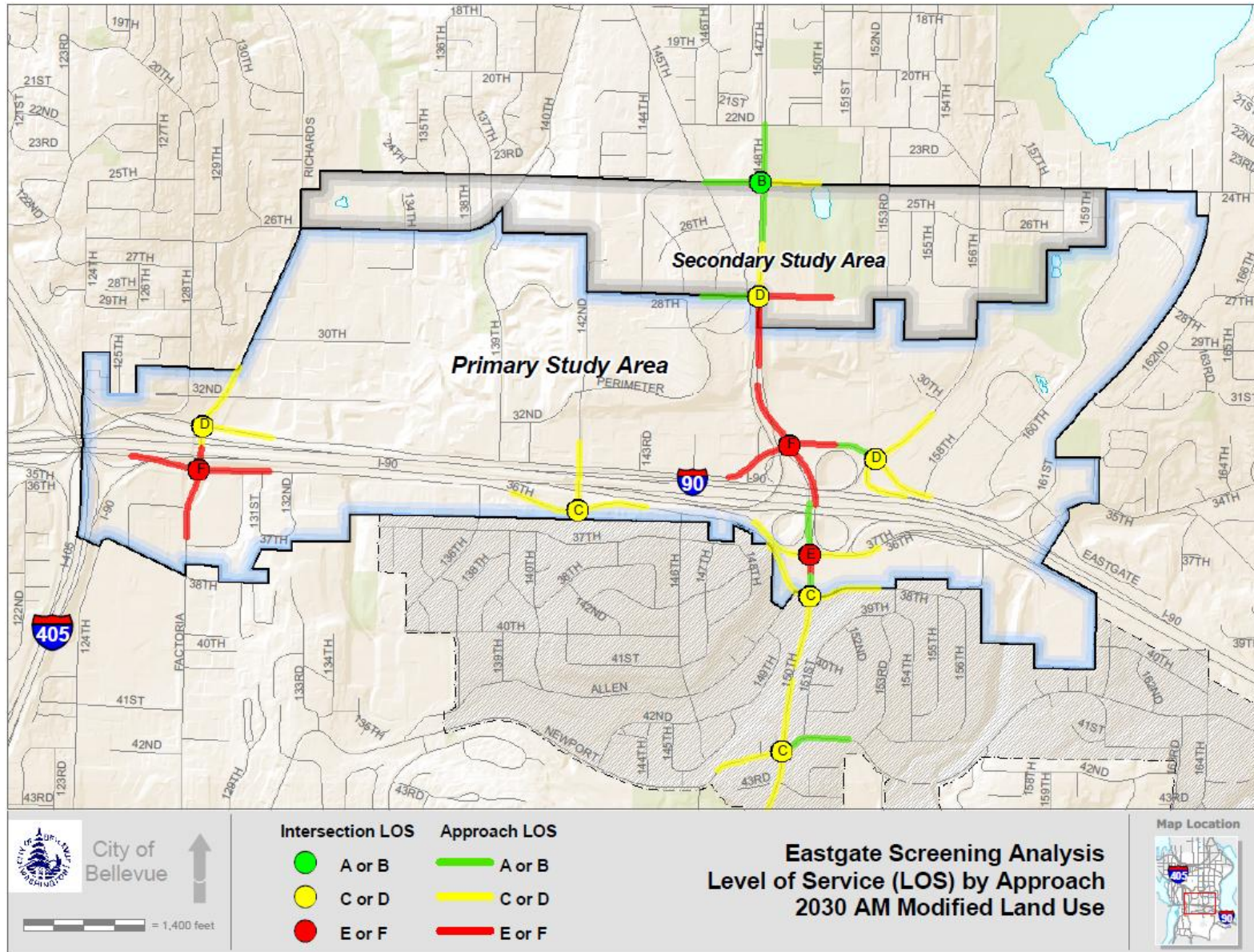


Exhibit 11: 2030 Modified Land Use Alternative - PM Peak Hour Level of Service (Synchro Model)

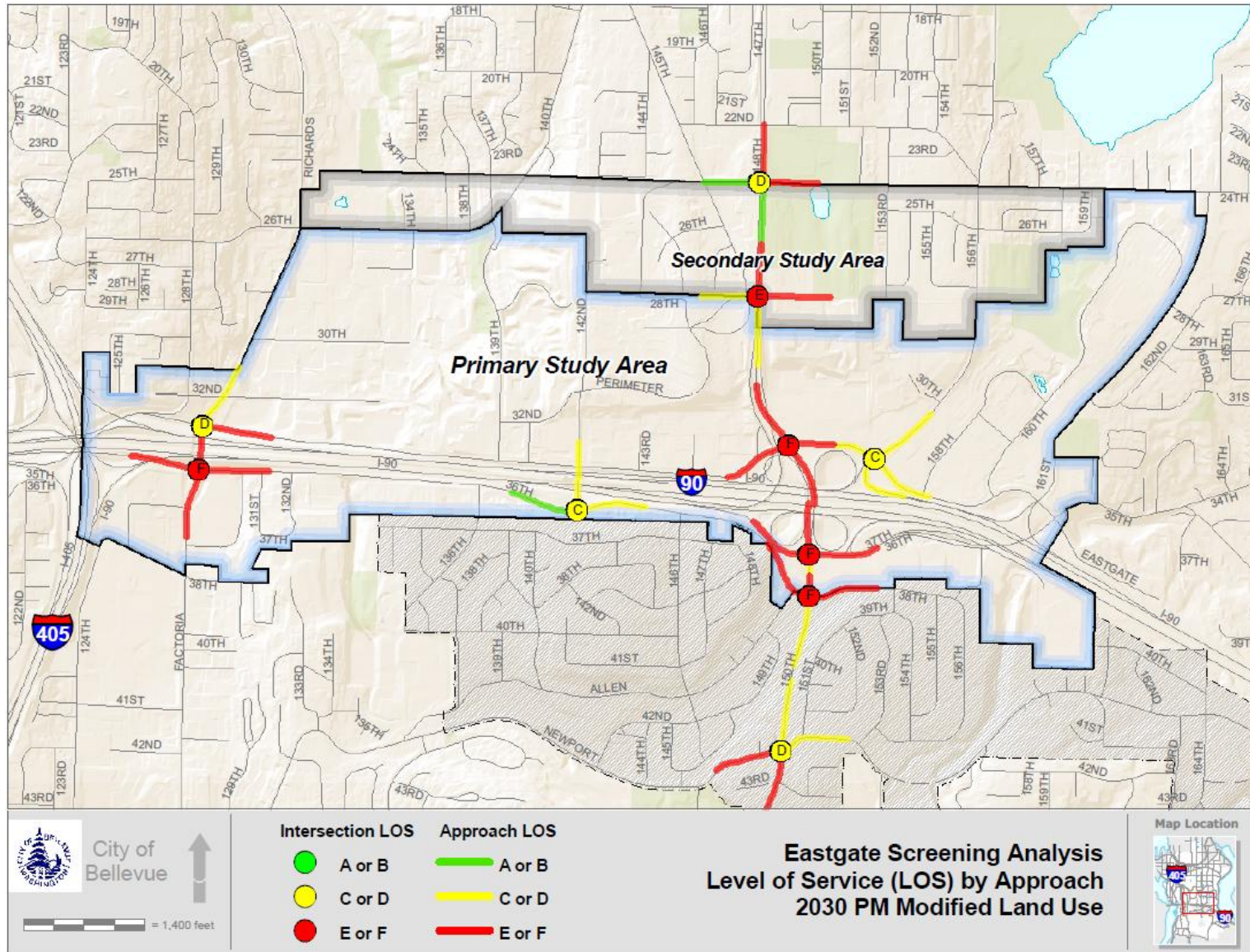


Exhibit 12: 2008 AM Peak Hour Levels of Service and Queue Lengths

Intersection	Overall LOS	Overall Delay	Approach	LOS	Delay (sec.)	50 TH Queue (feet)	95 TH Queue (feet)
#55 148 th Avenue SE @ SE 24 th Street	A	9.6	EB WB NB SB	A B A B	3.7 19.7 8.9 11.9	14' 2' 0 122'	31' 17' 883' 397'
#57 148 th Avenue SE @ SE 28 th Street	C	22.4	EB WB NB SB	A E C B	0.4 61.8 27.4 14.3	0 23' 839' 271'	0 54' 1,448' 335'
#86 156 th Avenue SE @ SE Eastgate Way	C	23.6	EB WB NB SB	C B C C	26.0 16.7 24.3 21.6	67' 25' 123' 35'	150' 46' 243' 74'
#101 150 th Avenue SE @ SE Eastgate Way	D	42.4	EB WB NB SB	D C E C	37.0 28.0 59.1 32.3	62' 294' 347' 122'	108' 513' 532' 163'
#105 Richards Road @ Eastgate Way	D	42.0	WB NB SB	D D C	47.4 47.8 21.2	113' 538' 84'	176' 768' 116'
#133 150 th Avenue SE @ SE Newport Way	C	20.4	EB WB NB SB	C B C C	25.1 13.4 22.9 23.0	40' 68' 101' 87'	112' 160' 215' 206'
#171 142 nd Avenue SE @ SE 36 th Street	A	9.7	EB WB SB	A B B	3.1 11.8 14.3	16' 185' 16'	40' 362' 60'
#174 150 th Avenue SE @ SE 38 th Street	C	21.1	EB WB NB SB	D C C B	46.2 30.6 21.7 11.3	94' 24' 237' 61'	132' 75' 388' 112'
#204 Factoria Boulevard @ SE 36 th Street	D	53.5	EB WB NB SB	D D E D	42.7 40.0 72.2 40.8	273' 110' 420' 209'	425' 179' 527' 372'
#227 150 th Avenue SE @ I-90 Off-Ramp (SE 36 th Street)	D	49.3	EB WB NB SB	C D F A	24.8 44.0 82.3 9.9	103' 61' 346' 65'	139' 129' 470' 105'

Exhibit 13: 2008 PM Peak Hour Levels of Service and Queue Lengths

Intersection	Overall LOS	Overall Delay	Approach	LOS	Delay (sec.)	50 TH Queue (feet)	95 TH Queue (feet)
#55 148 th Avenue SE @ SE 24 th Street	B	15.0	EB WB NB SB	A D B B	8.6 40.2 10.7 19.7	56' 21' 134' 646'	94' 52' 474' 1,193'
#57 148 th Avenue SE @ SE 28 th Street	D	36.5	EB WB NB SB	C E C D	32.5 59.3 25.5 46.2	65' 59' 619' 534'	108' 111' 729' 661'
#86 156 th Avenue SE @ SE Eastgate Way	D	41.7	EB WB NB SB	D D D D	47.1 42.6 41.7 37.0	123' 159' 364' 168'	213' 300' 606' 279'
#101 150 th Avenue SE @ SE Eastgate Way	E	58.2	EB WB NB SB	E E D D	73.4 57.9 51.8 54.1	216' 335' 148' 885'	308' 610' 294' 1,018'
#105 Richards Road @ Eastgate Way	C	28.4	WB NB SB	D C C	49.8 27.2 21.6	223' 409' 169'	286' 488' 333'
#133 150 th Avenue SE @ SE Newport Way	C	28.2	EB WB NB SB	D B D C	39.6 17.6 37.6 25.8	99' 50' 80' 325'	127' 100' 132' 719'
#171 142 nd Avenue SE @ SE 36 th Street	B	17.4	EB WB SB	B B D	10.1 14.7 38.5	186' 141' 171'	365' 258' 247'
#174 150 th Avenue SE @ SE 38 th Street	D	37.3	EB WB NB SB	E E C C	57.1 70.0 30.9 23.4	311' 113' 156' 350'	377' 176' 237' 485'
#204 Factoria Boulevard @ SE 36 th Street	E	69.9	EB WB NB SB	E E E E	74.1 75.2 59.1 75.3	351' 543' 500' 471'	582' 792' 624' 534'
#227 150 th Avenue SE @ I-90 Off-Ramp (SE 36 th Street)	E	69.2	EB WB NB SB	E F E E	69.2 116.2 65.5 66.1	532' 112' 355' 695'	791' 243' 528' 723'

Exhibit 14: 2030 Original (Base) AM Peak Hour Levels of Service and Queue Lengths

Intersection	Overall LOS	Overall Delay	Approach	LOS	Delay (sec.)	50 TH Queue (feet)	95 TH Queue (feet)
#55 148 th Avenue SE @ SE 24 th Street	B	10.3	EB WB NB SB	A D A B	0.2 51.2 8.8 14.5	0 11' 106' 230'	0 28' 816' 544'
#57 148 th Avenue SE @ SE 28 th Street	D	46.0	EB WB NB SB	A E E B	0.4 71.7 63.5 15.8	0' 27' 1,937' 355'	0' 61' 2,234' 418'
#86 156 th Avenue SE @ SE Eastgate Way	C	25.6	EB WB NB SB	C B C C	24.5 17.1 25.9 29.7	87' 12' 143' 68'	180' 40' 324' 148'
#101 150 th Avenue SE @ SE Eastgate Way	E	58.5	EB WB NB SB	E E E E	58.2 56.2 58.9 60.7	119' 546' 728' 235'	174' 776' 989' 289'
#105 Richards Road @ Eastgate Way	D	39.3	WB NB SB	D D C	43.7 42.5 26.4	83' 561' 95'	160' 787' 176'
#133 150 th Avenue SE @ SE Newport Way	C	23.3	EB WB NB SB	C B C C	31.8 13.9 27.4 26.7	59' 110' 158' 111'	158' 208' 272' 204'
#171 142 nd Avenue SE @ SE 36 th Street	C	2.8	EB WB SB	B C C	13.5 21.3 30.8	30' 349' 85'	96' 693' 165'
#174 150 th Avenue SE @ SE 38 th Street	C	24.8	EB WB NB SB	D C C B	42.8 33.1 25.0 14.8	121' 30' 310' 69'	161' 81' 506' 121'
#204 Factoria Boulevard @ SE 36 th Street	F	83.1	EB WB NB SB	F F E E	104.6 100.5 70.7 68.6	469' 203' 752' 285'	781' 307' 862' 466'
#227 150 th Avenue SE @ I-90 Off-Ramp (SE 36 th Street)	E	74.9	EB WB NB SB	C D F B	24.9 37.3 131.0 12.4	162' 34' 435' 51'	220' 74' 562' 74'

Exhibit 15: 2030 Original (Base) PM Peak Hour Levels of Service and Queue Lengths

Intersection	Overall LOS	Overall Delay	Approach	LOS	Delay (sec.)	50 TH Queue (feet)	95 TH Queue (feet)
#55 148 th Avenue SE @ SE 24 th Street	C	31.0	EB WB NB SB	A F B D	1.2 84.4 12.8 53.3	5' 45' 308' 1,607'	18' 83' 479' 1,731'
#57 148 th Avenue SE @ SE 28 th Street	D	51.6	EB WB NB SB	A E C E	4.0 78.0 26.1 71.5	0' 75' 948' 409'	6' 135' 1,249' 356'
#86 156 th Avenue SE @ SE Eastgate Way	C	28.5	EB WB NB SB	C C C C	25.0 24.4 31.8 31.8	72' 70' 117' 96'	144' 163' 213' 310'
#101 150 th Avenue SE @ SE Eastgate Way	E	57.0	EB WB NB SB	E E D E	55.1 55.2 37.5 67.7	163' 393' 153' 624'	291' 619' 228' 722'
#105 Richards Road @ Eastgate Way	D	48.4	WB NB SB	E E C	75.9 59.6 28.3	273' 650' 289'	404' 879' 415'
#133 150 th Avenue SE @ SE Newport Way	D	41.2	EB WB NB SB	E C D D	62.5 26.4 51.5 37.0	201' 83' 101' 650'	355' 151' 146' 1,044'
#171 142 nd Avenue SE @ SE 36 th Street	B	19.2	EB WB SB	B C C	12.1 22.7 29.7	174' 299' 116'	285' 387' 256'
#174 150 th Avenue SE @ SE 38 th Street	E	71.6	EB WB NB SB	F E C E	89.9 60.0 30.5 75.8	353' 103' 104' 551'	479' 149' 163' 797'
#204 Factoria Boulevard @ SE 36 th Street	F	115.7	EB WB NB SB	F F F F	115.0 103.0 96.5 140.7	647' 518' 698' 558'	886' 767' 810' 626'
#227 150 th Avenue SE @ I-90 Off-Ramp (SE 36 th Street)	E	65.7	EB WB NB SB	F E C D	146.5 71.0 29.5 52.5	433' 139' 215' 652'	637' 275' 307' 790'

Exhibit 16: 2030 Modified AM Peak Hour Levels of Service and Queue Lengths

Intersection	Overall LOS	Overall Delay	Approach	LOS	Delay (sec.)	50 TH Queue (feet)	95 TH Queue (feet)
#55 148 th Avenue SE @ SE 24 th Street	B	10.4	EB WB NB SB	A D A B	0.4 45.9 8.9 15.0	1' 10' 115' 236'	6' 27' 800' 548'
#57 148 th Avenue SE @ SE 28 th Street	D	45.5	EB WB NB SB	A E E C	2.1 71.8 59.9 21.1	0 26' 1,909' 387'	8' 59' 2,175' 510'
#86 156 th Avenue SE @ SE Eastgate Way	D	38.8	EB WB NB SB	D B D D	36.2 17.4 46.3 39.2	156' 36' 248' 88'	215' 78' 372' 165'
#101 150 th Avenue SE @ SE Eastgate Way	F	95.3	EB WB NB SB	F F F F	89.5 89.6 103.4 85.9	192' 870' 1,042' 298'	315' 1,121' 1,309' 390'
#105 Richards Road @ Eastgate Way	D	46.5	WB NB SB	D D C	48.9 50.6 30.6	105' 642' 100'	185' 873' 197'
#133 150 th Avenue SE @ SE Newport Way	C	25.0	EB WB NB SB	C B C C	34.8 14.3 29.7 28.4	64' 123' 180' 127'	166' 217' 308' 225'
#171 142 nd Avenue SE @ SE 36 th Street	C	26.9	EB WB SB	C C D	20.5 26.6 37.7	51' 426' 111'	165' 769' 199'
#174 150 th Avenue SE @ SE 38 th Street	C	26.6	EB WB NB SB	D D C B	42.4 37.3 26.5 16.4	131' 44' 322' 76'	175' 99' 551' 125'
#204 Factoria Boulevard @ SE 36 th Street	F	101.5	EB WB NB SB	F F F E	99.2 115.0 111.1 72.0	580' 209' 864' 293'	828' 312' 972' 474'
#227 150 th Avenue SE @ I-90 Off-Ramp (SE 36 th Street)	E	79.9	EB WB NB SB	C D F B	31.4 38.6 143.1 13.4	214' 50' 452' 52'	308' 99' 580' 78'

Exhibit 17: 2030 Modified PM Peak Hour Levels of Service and Queue Lengths

Intersection	Overall LOS	Overall Delay	Approach	LOS	Delay (sec.)	50 TH Queue (feet)	95 TH Queue (feet)
#55 148 th Avenue SE @ SE 24 th Street	D	52.5	EB WB NB SB	A F B F	2.1 81.7 17.3 98.3	14' 43' 472' 1,711'	35' 81' 659' 1,822'
#57 148 th Avenue SE @ SE 28 th Street	E	58.1	EB WB NB SB	C E C F	32.9 76.6 32.5 80.5	31' 74' 1,180' 357'	64' 131' 1,593' 302'
#86 156 th Avenue SE @ SE Eastgate Way	C	34.3	EB WB NB SB	C C D D	24.1 22.2 50.6 43.2	92' 106' 154' 155'	162' 173' 285' 404'
#101 150 th Avenue SE @ SE Eastgate Way	F	98.2	EB WB NB SB	F F E F	113.0 91.5 58.6 114.9	397' 601' 225' 784'	541' 830' 368' 879'
#105 Richards Road @ Eastgate Way	D	53.3	WB NB SB	E E C	77.6 68.1 31.0	292' 706' 310'	440' 936' 425'
#133 150 th Avenue SE @ SE Newport Way	D	46.7	EB WB NB SB	F D E D	87.6 38.4 63.4 37.6	231' 114' 126' 860'	409' 211' 175' 1,310'
#171 142 nd Avenue SE @ SE 36 th Street	C	25.3	EB WB SB	B C D	14.8 26.8 43.4	187' 200' 167'	308' 388' 349'
#174 150 th Avenue SE @ SE 38 th Street	F	118.3	EB WB NB SB	F F D F	93.5 84.0 42.0 150.8	526' 156' 147' 868'	662' 232' 216' 1,067'
#204 Factoria Boulevard @ SE 36 th Street	F	120.5	EB WB NB SB	F F F F	116.1 109.9 104.1 143.0	613' 501' 683' 552'	848' 745' 794' 624'
#227 150 th Avenue SE @ I-90 Off-Ramp (SE 36 th Street)	F	93.0	EB WB NB SB	F F D E	207.4 84.2 41.1 75.9	544' 162' 258' 740'	757' 303' 383' 878'

Exhibit 18: Levels of Service and Delay for All Scenarios

Intersection	2008 AM		2030 AM Orig LU		2030 AM Mod LU		2008 PM		2030 PM Orig LU		2030 PM Mod LU	
	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
#55 - 148th Ave SE @ SE 24th Street	A	8.6	B	10.3	B	10.4	B	15.0	C	31.0	D	52.5
#57 - 148th Ave SE @ SE 28th Street	C	22.4	D	46.0	D	45.5	D	36.5	D	51.6	E	58.1
#86 - 156th Ave SE @ SE Eastgate Way	C	23.6	C	25.6	D	38.8	D	41.7	C	28.5	C	34.3
#101 - 150th Ave SE @ SE Eastgate Way	D	42.4	E	58.5	F	95.3	E	58.2	E	57.0	F	98.2
# 105 - Richards Road @ Eastgate Way	D	42.0	D	39.3	D	46.5	C	28.4	D	48.4	D	53.3
#133 - 150th Avenue SE @ SE Newport Way	C	20.4	C	23.3	C	25.0	C	28.2	D	41.2	D	46.7
#171 - 142nd Avenue SE @ SE 36th Street	A	9.7	C	2.8	C	26.9	B	17.4	B	19.2	C	25.3
#174 - 150th Avenue SE @ SE 38th Street	C	21.1	C	24.8	C	26.6	D	37.3	E	71.6	F	118.3
#204 – Factoria Blvd @ SE 36 th Street	D	53.5	F	83.1	F	101.5	E	69.9	F	115.7	F	120.5
#227 - 150th Avenue SE @ I-90 Off-Ramp	D	49.3	E	74.9	E	79.9	E	69.2	E	65.7	F	93.0

Level of Service

The Synchro model results indicate that most of the ten intersections operate at acceptable levels of service under most of the scenarios, including the 2030 Modified Land Use scenarios. The worst condition is under the PM peak hour of the 2030 Modified Land Use alternative, where four of the ten intersections operate at LOS F, and one intersection operates at LOS E.

As shown in the above tables, the intersection that operates poorly under most of the scenarios is Intersection 204 (Factoria Boulevard at SE 36th Street). This intersection would operate at LOS F under all of the scenarios with the exception of the 2008 AM and PM peaks. Under those scenarios where the intersection operates at LOS F, all of the individual approaches operate at either LOS E or F.

Intersection 101 (150th Avenue SE / SE Eastgate Way) also operates poorly under the 2030 Modified Land Use during the AM and PM peak hours. Under those scenarios, all of the individual approaches operate at either LOS E or F.

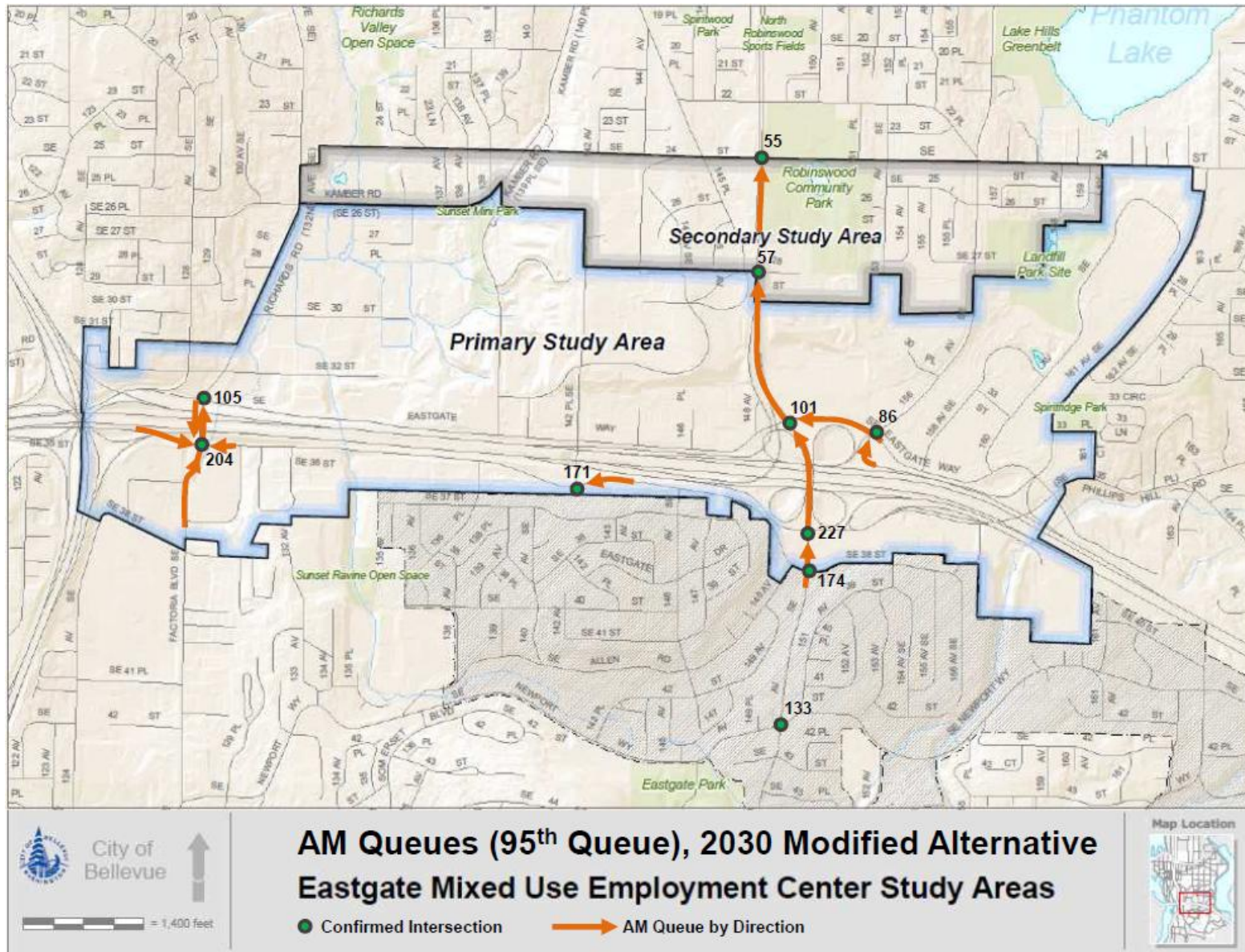
Intersections 174 (150th Avenue SE / SE 38th Street) and 227 (150th Avenue SE / I-90 Off-ramp) would both operate at LOS F under the 2030 Modified Land Use PM peak hour scenario.

Queues

Queue lengths for individual intersections and approaches for each alternative and peak period are provided in **Exhibits 8 thru 17**. **Exhibits 19 and 20** show locations where significant queues occur under the 2030 Modified Land Use alternative, for the AM and PM peak hours, respectively. As seen in those diagrams, there are two primary areas where queuing would impact downstream intersections:

- At Richards Road and Eastgate Way (Intersection 105), the northbound queues (during both the AM and PM peak hours) would impact the intersection of Factoria Boulevard and SE 36th Street (Intersection 204), due to the short distance between these two intersections.
- At 150th Avenue SE at SE 37th Street (Intersection 227), northbound queues during the AM peak hour would affect operations at the intersection of 150th Avenue SE at SE 38th Street (Intersection 174). During the PM peak hour, the opposite would occur. Queues in the southbound direction at Intersection 174 would impact the operations at Intersection 227. This is compounded by heavy eastbound queues on both the I-90 off-ramp and SE 38th Street, west of 150th Avenue SE.

Exhibit 19: 2030 Modified Land Use Alternative - AM Peak Hour Queues



PM Queues (95th Queue), 2030 Modified Alternative Eastgate Mixed Use Employment Center Study Areas

● Confirmed Intersection → PM Queue by Direction

EXISTING TRANSIT SERVICE

The following is a brief description of transit services currently provided by King County Metro and Sound Transit within the Eastgate and Factoria areas.

Local Routes

- Redmond via 148th Avenue NE (Route 221)
- Kirkland, Overlake, BCC, Factoria via 156th Avenue SE (Route 245)
- Bellevue, Beau Arts, Factoria via Newport Way (Route 222)
- Issaquah, Bellevue College, Lake Hills, Bellevue, Medina, University District (Route 271)
- Issaquah, Mercer Island, downtown Seattle (Sound Transit Route 554)
- Factoria, Somerset, Woodridge, Bellevue via 123rd Avenue SE (Route 921, M-F)
- Crossroads, Phantom Lake, BCC via 164 NE/168th Avenue SE (Route 926, M-F)
- Renton, Newport Hills, South Bellevue, Bellevue, Clyde Hill (Factoria service only – Route 240)
- I-90 & Richards Road (Routes 222, 240)

Commuter Service

- Issaquah, Factoria, downtown Seattle (Route 210)
- Eastgate, Mercer Island, First Hill (Route 211)
- Eastgate, downtown Seattle (Route 212 bi-directional peak)
- Issaquah, downtown Seattle (Route 214 bi-directional peak /217 reverse peak/218)
- Redmond, Pine Lake, Issaquah, downtown Seattle (Route 216)
- Overlake, Phantom Lake, 156th Avenue SE & Eastgate Way, downtown Seattle (Routes 225/229)
- Redmond, Factoria, Renton, Kent (Route 247)
- Eastgate, Crossroads, U District (Route 272)
- Issaquah, BCC, Factoria, Bellevue, Northgate (Route 555 reverse peak)
- Issaquah, Bellevue, University District, Northgate (Route 556)
- I-90 & Richards Road (Routes 210, 211, 212, 217, 555)

Bus Mobility – Local Daily Service

The current bus network provides regular daily service from several Eastside communities and Seattle to the Eastgate Park and Ride and/or the Eastgate Freeway Station stop, along Eastgate Way between the park and ride and 150th Avenue SE and along SE 36th Street. Direct local bus service is provided from Issaquah, Factoria, downtown Bellevue, South Bellevue, Medina, Lake Hills, Crossroads, Redmond, Overlake, Mercer Island, Kirkland, University District and downtown Seattle. Communities south of Factoria are not provided with direct bus service but can access Eastgate by transfer at Factoria or the South Bellevue Park and Ride lot.

Bus Mobility – Commuter Peak-Period Service

There are numerous commuter-orientated bus routes serving the Eastgate Park and Ride and/or Eastgate Freeway Station and Eastgate Way. Most of these routes are designed to serve downtown Seattle via Eastgate en-route from Issaquah. Other routes include: Redmond to Renton and Kent, Issaquah to Northgate via Bellevue and University District, Eastgate to University District via Crossroads and Eastgate to First Hill via Mercer Island.

In addition, there are 'reverse peak' direction routes from downtown Seattle to Issaquah and from Northgate to Issaquah via Bellevue and Factoria. Communities south of Factoria are not provided with direct bus service but can access Eastgate by transfer at Factoria or the South Bellevue Park and Ride.

EXISTING TRANSIT SERVICE TO PROPOSED GROWTH AREAS

The following exhibit provides a brief summary of the existing level of transit service to those TAZs that have proposed additional land uses.

Exhibit 21: Current Transit Service to Proposed Growth Areas

TAZ	Proposed Land Uses	Current Transit Service
114	Office	Route 921 on 139th Ave SE and on SE 26th St. These routes serve the perimeter of this area; Routes 210, 211, 212, 217, 222, 240 and 555 at I-90 & Richards Road at the southwest corner
116	Institutional / Multi-Family	Routes 221, 245, 271, 926 through BCC campus; Route 222 and commuter routes at 142nd Ave SE & SE 32nd St (Bellevue College campus entrance)
117	Office / Multi-Family	Routes 221, 245, 271 and 921 on Eastgate Way
122	Office / Multi-Family	No service (east of 156th Ave SE north of Eastgate Way)
123	Hotel	No service (east of 156th Ave SE north of Eastgate Way)
145	Multi-Family	Route 271 along 150th Ave SE, Newport Way, Eastgate Way
157	Hotel	Route 271 on Newport Way

Due to the fact that the I-90 freeway splits the Eastgate study area in half, the street network available for transit service is very minimal. Buses have very limited crossing points over I-90 yet major development is planned for both sides of the freeway. It is a challenge to establish a route network that is efficient and user friendly, providing coverage and directness of service.

The current network of local and commuter routes provide direct service from most communities north of I-90, from Issaquah, Mercer Island and downtown Seattle. There is minimal local service from the Factoria and Somerset areas south of I-90 to Eastgate. It is nearly impossible to provide effective transit service from the various communities to all of the Eastgate and Factoria area destinations with a one-seat ride (without a transfer).

There are three TAZ areas being examined for future land use growth that currently lack sufficient bus service. These are:

- TAZ 114 - Between I-90 and SE 26th Place and Richards Road and 139th Avenue SE (Proposed Office)
- TAZ 122 - East of 150th Avenue SE and north of Eastgate Way (Proposed MFDU and Office)
- TAZ 123 - East of 150th Avenue SE and along Eastgate Way (Proposed Hotel)

TAZ 114 currently has very limited bus service with Route 921 operating every 30 minutes during the peak and 60 minutes in the off-peak between Factoria and Bellevue via Eastgate and Spirit Ridge. It serves TAZ 114 along 139th Avenue SE and along SE 26th Street. Otherwise,

commuter and local service is available on several routes at the I-90 & Richards Road stop, representing a potentially long walk.

TAZs 122 and 123 have peak-direction commuter service to and from downtown Seattle only at about 161st Street SE / Eastgate Way.

Changes to the existing bus network would require routes to operate out of direction to serve these TAZ areas with limited or no bus service. KC Metro recently implemented a restructure of Eastside bus routes that included realigning service to be more direct and connect more communities.

The following is a break-down of the services provided in the TAZ areas by development type.

Hotels

Hotel development in TAZ 157 appears to be adequately served by regular Route 271 therefore no changes are suggested. Hotel development in TAZ 123 is not served by regular service. Hotels typically are not significant trip generators for transit. However, hotel employees who are transit dependent are likely users of bus service.

Institution

Bellevue College is a major attractor for transit services. Further development of the Bellevue College campus in TAZ 116 would likely increase the demand for transit service. There are a number of routes currently serving the campus or with stops near the campus. A proposed route adjustment is described under Transit Recommendations.

Multi-Family

High density multi-family developments are major attractors for transit service. TAZ areas 116 and 117 are sufficiently served by regular and commuter services. A proposed route adjustment is described for TAZ 116 under Transit Recommendations that would improve directness of service.

TAZ 145 is also served very well with regular transit service with Route 271 and Route 921 although access to commuter service requires residents to drive to the Eastgate Park and Ride or transfer.

TAZ 122 is not well served by regular local bus service. This area has limited commuter bus service oriented to downtown Seattle. Residents must transfer (if during peak-period) or drive to Eastgate Park and Ride to access an array of transit services.

Office

TAZ 114 is very inadequately served by local and commuter services. One route operates along the perimeter from Factoria to Bellevue via the Eastgate Park and Ride and several local and commuter routes stop at I-90 and Richards Road. Although this is in TAZ 114, it would likely be a considerable walk from this bus stop to most office locations.

TAZ 117 is located in the heart of Eastgate area transit services. Nearly all commuter and regular bus routes serve this area with stops at the Eastgate Park and Ride, Eastgate Freeway Station and a few miscellaneous locations.

TAZ 122 is not well served by regular local bus service. This area has limited commuter bus service oriented to downtown Seattle. There is no transit access for commuters to reach this area during peak or off-peak times. The nearest stop for regular bus service is 150th Avenue SE and Eastgate Way, a considerable distance from the TAZ 122 office development area.

PRELIMINARY RECOMMENDATIONS

The following section provides an overview of the preliminary list of recommended projects based on the transportation analysis and input from City of Bellevue staff. The projects are shown in **Exhibits 22 and 23**.

Intersection Improvements

Pertee analyzed ten intersections using the City's Synchro model to identify changes that could improve the delay and v/c level of service at intersections. The 10 intersections were based on where an initial review of the City's BKR model results indicated potential level of service (LOS) issues. Based on the Synchro analysis, it was determined that most of the intersections will operate within their LOS standard for the 2030 scenarios (AM and PM). Those intersections that had LOS or delay issues included:

- Intersection 101 – 150th Avenue SE / SE Eastgate Way
- Intersection 174 – 150th Avenue SE / SE 38th Street
- Intersection 204 – Factoria Boulevard / SE / SE 36th Street
- Intersection 227 – 150th Avenue SE / I-90 EB Off-ramp

While the primary recommendations for these intersections are to mitigate the LOS to an acceptable level, other non-motorized improvements associated with the intersections were also recommended. Most of the non-motorized recommendations are consistent with the City's Pedestrian and Bicycle Transportation Plan. For all other intersections where capacity improvements are not recommended, it is assumed that non-motorized improvements would be made that are consistent with the City's Pedestrian and Bicycle Transportation Plan.

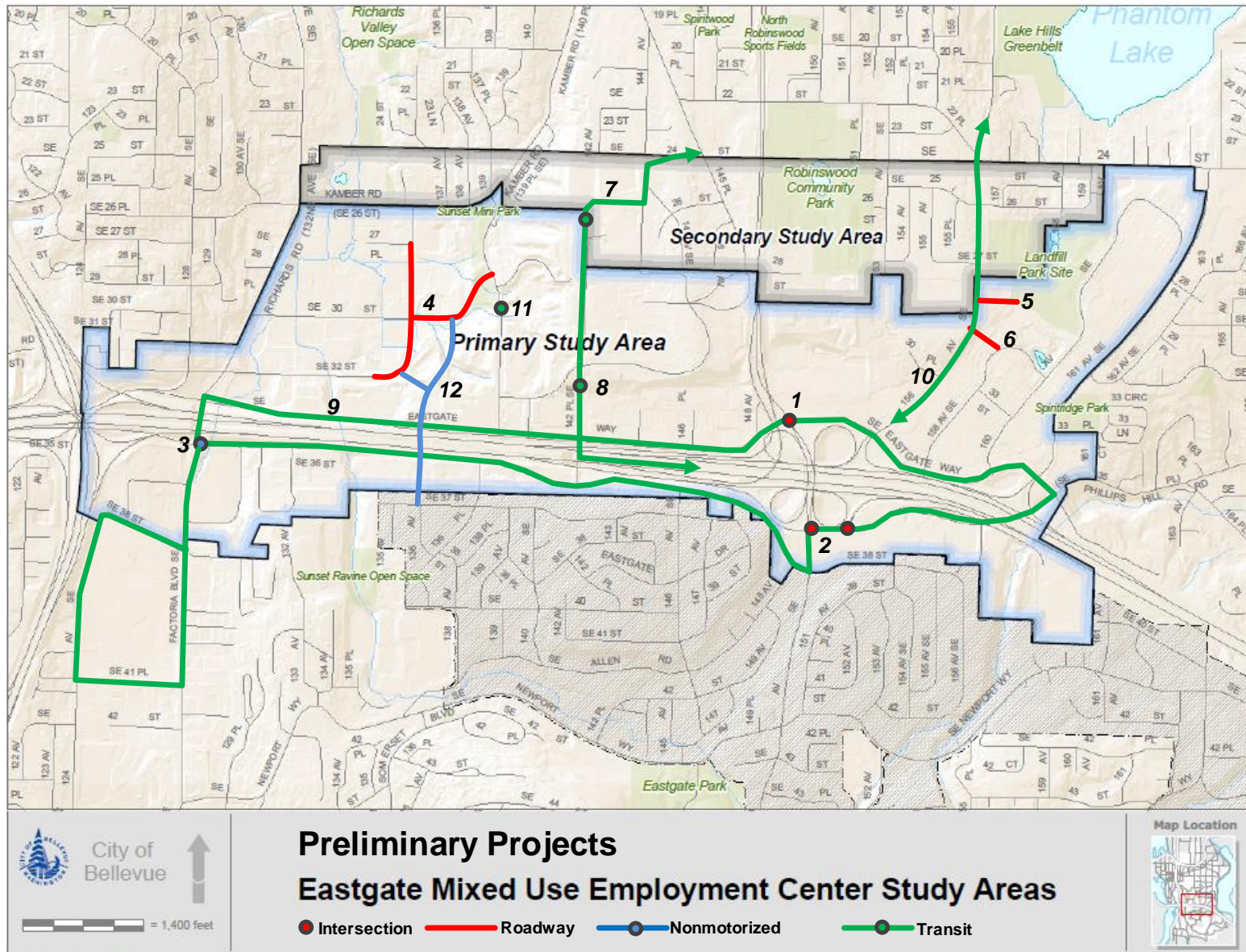
In addition, WSDOT is in the process of completing the I-90 Bellevue to North Bend Corridor Study, which includes recommendations within the Eastgate area. Some of the primary recommendations include an eastbound auxiliary lane from 150th Avenue SE to West Lake Sammamish Parkway SE, a westbound auxiliary lane from SR 900 to 150th Avenue SE, conversion of existing I-90 HOV lanes to High Occupancy Toll (HOT) lanes, channelization / signal improvements at 150th Avenue SE / SE 37th Street (Intersection 227), Eastgate Way / 156th Avenue SE (Intersection 86), Eastgate Way / 161st Avenue SE, and roundabout improvements on West Lake Sammamish Parkway SE at 180th Avenue SE. While this report makes additional recommendations for some of these intersections (Intersections 86 and 227), the City will be reviewing WSDOT's recommendations to identify optimization strategies that may improve or mitigate the existing and future intersection conditions.

The intersections depicted in this section should be regarded as illustrative only. The illustrations do not depict a design standard and should not be used as such. Much additional engineering and design will be needed on all of these projects when determining the most optimal transportation facility.

Exhibit 22: Preliminary Recommended Projects

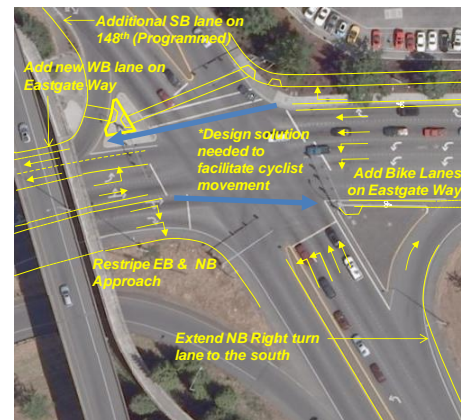
Map No.	Location	Project Description	Planning Level Cost
1	Eastgate Way / 150th Avenue SE (Option A)	Remove the east-west split phase, and restripe eastbound approach to a left turn lane, thru lane, and dual right turn lanes. Widen/restripe the northbound approach for dual left turn lanes, two thru lanes, and extend the right turn lane. Add additional westbound lane on the east and west legs. Include non-motorized improvements including bike lanes on Eastgate Way.	\$2.1 million
1	Eastgate Way / 150th Avenue SE (Option B)	Restripe the eastbound approach to a left turn, thru lane, thru/right turn lane, and right turn lane.	\$35,000
2	150th Avenue SE / SE 37th Street	On the westbound approach, add dual WB left turns, and on the east leg, add dual EB left turn lanes and signal to I-90 EB onramp; Add additional EB thru lane. Include new sidewalk on south side. On the eastbound approach, widen I-90 offramp and stripe as a left turn, thru lane, and dual right turn lanes. On the southbound approach, extend the SB left turn lane to a total of 300' in length and phase as protected / permissive; Extend planned third SB lane to the intersection of SE 37th Street / 150th Ave SE. On the south leg, extend the SB right turn lane at SE 38th Street to the north to SE 37th Street. Run split signal phasing for the east and west legs.	\$4.5 million
3	Factoria Blvd / SE 36th Street	Add curb extensions to the northeast, southeast and southwest corners, and bicycle improvements including bike lanes on SE 36th Street and improvements through the intersection.	\$221,000
4	New Street Grid East of Richards Road	Extend SE 30th Street to connect to 139th Avenue SE, and extend 136th Avenue SE south to link with SE 32nd Street. Projects include sidewalks and bike lanes both sides of roads.	\$16.8 million
5	New East-west Road connection to 156th Ave SE (Option A)	New road to connect from planned park access road to 156th Ave SE	\$2.4 million
6	New East-west Road connection to 156th Ave SE (Option B)	New road to connect from existing office park road to 156th Ave SE	\$3.8 million
7	Bellevue College Transit Improvements	Reconstruct Kelsey Creek Road and Snoqualmie River Road to accommodate transit, and add new transit stop. Realign Snoqualmie River Road at 142nd Ave SE.	\$4.4 million
8	BRT Improvements on 142nd Ave SE	Add transit stop on both sides of 142nd Ave SE at pedestrian bridge to Eastgate Park and Ride, and route a future BRT route along 142nd Ave SE through Bellevue College.	\$250,000
9	Eastgate Circulator	Implement a transit circulator to serve Eastgate area. Two routes were examined including a route that serves Factoria Square.	\$930,000 (Annual)
10	Restructure Route 245	Restructure route 245 to serve 156th Ave SE	\$0
11	Transit Stop on 139th Ave SE	Add new transit stops on both sides of 139th Ave SE between Kamber Road and Eastgate Way.	\$40,000
NA	Transportation Demand Management	Examine potential TDM improvements including a Bellevue College transit pass for students/employees, parking management, and vanshare opportunities.	NA
NA	Hotel Shuttle Service	Examine potential opportunities for hotels to implement a shuttle service to regional activity centers.	NA
12	Multi-use Trails and bridge over I-90	Build a multi-use bridge over I-90 between Factoria Blvd. and 139th Ave SE, and associated trails to link to adjacent future land uses and roads.	\$16.1 million

Exhibit 23: Preliminary Recommended Projects



Eastgate Way / 150th Avenue SE (Intersection 101): Under the 2030 Modified Land Use alternative during both the AM and PM peak hours, the intersection operates at LOS F. Most of the individual approaches also operate at LOS F under both peak periods, with the exception of the northbound movement during the PM peak hour, which operates at LOS E. Two options were examined for this intersection.

Option A includes significant widening of the intersection. This option would widen / restripe the east, west (eastbound) and south (northbound) legs. Today, the west leg (eastbound) approach has a left turn lane, left/thru lane, thru/right turn lane, and right turn lane. It is recommended that the east-west split phase be removed, and that the west leg be restriped to include a left turn lane, thru lane, and dual right turn lanes. The south leg (northbound) should be widened and restriped for dual left turn lanes (today, there is one northbound left turn lane), two thru lanes, and the right turn lane should be extended 250' to the south. The



Option A – Restripe eastbound and northbound approach and remove split phase.

The west leg would need widened to provide for an additional receiving or storage lane, with channelization for local access. The additional westbound lane should extend at a minimum to 148th Avenue SE, on the north side of Eastgate Way, but preferably even further to the west. The east leg should also be widened to the shopping center driveway, to provide for an additional westbound thru lane. This will require widening to the north, which will require a new sidewalk. The westbound right turn lane should be a minimum of 400' in length. There would be a signal phasing overlap between the eastbound right turn and northbound left turn movements. These improvements help to reduce southbound and westbound queues, and result in significant improvement to the LOS as shown in **Exhibit 24**.

Under **Option B**, the eastbound channelization would be changed on the west leg to a left turn, thru lane, thru/right turn lane, and right turn lane. Today, the channelization includes a left turn lane, left/thru lane, thru/right turn lane, and right turn lane. This improvement does not require any road widening (other than widening associated with future bike lanes), and would only require restriping. This option results in a minor improvement to the intersection operation as shown in **Exhibit 25**. The only notable benefit is the improvement of the LOS under the 2030 Base Alternative during the PM peak, where the LOS improves from LOS F to LOS E. Under the 2030 Modified Alternative, the delay improves, however the LOS remains at LOS F.

Nonmotorized Improvements

Bike facilities on Eastgate Way should be included through the intersection. Bike lanes should be provided along both sides of Eastgate Way. These projects are included in the City's Pedestrian and Bicycle Transportation Plan (Projects NN-38, NN-42 and NN-43). All of these projects are considered "High Priority" projects.

* *Cyclist movement at intersections* - During the preliminary screening analysis process, staff concern was expressed over facilitating bicycle movements across signalized intersections in

the study area. It was noted that bicyclists have special types of problems traveling through intersections, since they must operate their bikes as vehicles, but they are smaller and more vulnerable than the other vehicles. At intersections, it is particularly important that bicyclists be visible to both motorists and pedestrians. Bellevue already implements where feasible detection loop detectors for bikes at the stop bar, and these will continue to be an important design feature. Design elements that have been used in other cities (some more commonly than others) to improve cyclists' visibility at intersections include:

- Bike lanes that are located appropriately in relation to the vehicle turn lanes,
- Lead signal indicators (which provide a head-start and allow bicycles to clear the intersection ahead of motor vehicle traffic),
- Bicycle stop bars (which provide similar advantages as the lead signal indicators),
- Protected phases at signals (which separates right and left turning vehicle movements from conflicting through bicycle movements),
- Elephant's feet crossing for bicyclists across intersections where feasible,
- Shared lane markings or colored bike lanes across intersections, and
- Bike boxes, which require a bike lane leading to the intersection.

Much additional engineering and design will be needed in determining the most optimal means of facilitating cyclist movements across intersections in the study area.

Planning Level Opinion of Cost

Option A - The total estimated cost (including right-of-way) for roadway widening, new sidewalk on the north side of the road, and bicycle improvements (including bike lanes and striping or painting through the intersection) is approximately \$2.1 million (2009 dollars). The cost breakdown is shown below, and separates the non-motorized improvements from the capacity improvements. The new sidewalk on the northeast corner was assumed as part of the capacity improvements, because it would be required with the roadway widening. More detailed information is included in **Appendix B**.

Eastgate Way / 150 th Ave SE Improvements - Option A	Planning Level Opinion of Cost
<i>Capacity Improvements</i>	
Design	\$147,000
Right-of-Way	\$776,000
Construction	\$978,800
Subtotal	\$1,901,800
<i>Non-Motorized Improvements</i>	
Design	\$8,000
Right-of-Way	\$110,000
Construction	\$51,300
Subtotal	\$169,300
TOTAL	\$2,071,100

Exhibit 24: Intersection 101 – Mitigated LOS and Queue Lengths (Option A)

Intersection	Overall LOS	Overall Delay	Approach	LOS	Delay (sec.)	50 TH Queue (feet)	95 TH Queue (feet)
2030 AM Original Land Use	E	58.5	EB WB NB SB	E E E E	58.2 56.2 58.9 60.7	119' 546' 728' 235'	174' 776' 989' 289'
2030 AM Original Land Use *with Project	C	32.4	EB WB NB SB	D D C C	35.4 37.7 28.2 34.0	125' 346' 203' 142'	220' 561' 286' 186'
2030 AM Modified Land Use	F	95.3	EB WB NB SB	F F F F	89.5 89.6 103.4 85.9	192' 870' 1,042' 298'	315' 1,121' 1,309' 390'
2030 AM Modified Land Use *with Project	D	50.4	EB WB NB SB	E D D D	73.0 51.2 45.4 48.4	231' 584' 325' 202'	404' 818' 446' 254'
2030 PM Original Land Use	E	57.0	EB WB NB SB	E E D E	55.1 55.2 37.5 67.7	163' 393' 153' 624'	291' 619' 228' 722'
2030 PM Original Land Use *with Project	D	45.2	EB WB NB SB	D D C E	36.7 47.8 25.3 55.5	185' 418' 151' 579'	346' 631' 202' 709'
2030 PM Modified Land Use	F	98.2	EB WB NB SB	F F E F	113.0 91.5 58.6 114.9	397' 601' 225' 784'	541' 830' 368' 879'
2030 PM Modified Land Use *with Project	E	77.2	EB WB NB SB	D F D F	54.3 86.0 38.2 102.2	434' 690' 253' 886'	642' 929' 319' 978'

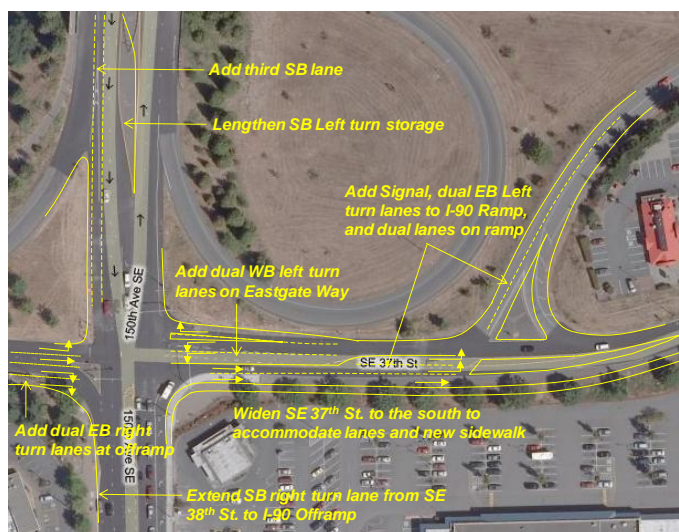
Exhibit 25: Intersection 101 – Mitigated LOS and Queue Lengths (Option B)

Intersection	Overall LOS	Overall Delay	Approach	LOS	Delay (seconds)	50 TH Queue (feet)	95 TH Queue (feet)
2030 AM Original Land Use	E	58.5	EB WB NB SB	E E E E	58.2 56.2 58.9 60.7	119' 546' 728' 235'	174' 776' 989' 289'
2030 AM Original Land Use *with Project	E	58.1	EB WB NB SB	E E E E	47.5 58.7 58.9 60.7	107' 540' 728' 235'	155' 776' 989' 289'
2030 AM Modified Land Use	F	95.3	EB WB NB SB	F F F F	89.5 89.6 103.4 85.9	192' 870' 1,042' 298'	315' 1,121' 1,309' 390'
2030 AM Modified Land Use *with Project	F	93.9	EB WB NB SB	F F F F	86.4 93.6 99.2 85.4	186' 929' 1,104' 316'	296' 1,185' 1,374' 398'
2030 PM Original Land Use	E	57.0	EB WB NB SB	E E D E	55.1 55.2 37.5 67.7	163' 393' 153' 624'	291' 619' 228' 722'
2030 PM Original Land Use *with Project	D	49.1	EB WB NB SB	D D D E	37.9 46.3 36.7 61.2	133' 518' 151' 612'	232' 631' 228' 709'
2030 PM Modified Land Use	F	98.2	EB WB NB SB	F F E F	113.0 91.5 58.6 114.9	397' 601' 225' 784'	541' 830' 368' 879'
2030 PM Modified Land Use *with Project	F	82.0	EB WB NB SB	F E D F	103.8 69.5 48.6 96.3	333' 556' 183' 702'	465' 780' 318' 798'

Option B - The total estimated cost for restriping the west leg of the intersection and signal modifications is approximately \$35,000 (2009 dollars). The cost breakdown is shown below, and more detailed information is included in **Appendix B**.

Eastgate Way / 150th Ave SE Improvements - Option B	Planning Level Opinion of Cost
Design	\$5,000
Right-of-Way	\$0
Construction	\$29,700
TOTAL	\$34,700

150th Avenue SE at SE 37th Street and SE 38th Street (Intersections 174 / 227): The intersections at 150th Avenue SE / SE 37th Street (Intersection 227), and 150th Avenue SE / SE 38th Street (Intersection 174) are poorly configured. These two signalized intersections are in close proximity to each other. Traffic coming from the west along SE 38th Street destined further east (either to I-90 or East Bellevue) must turn left (northbound) onto 150th Avenue SE, and turn east onto SE 37th Street. A significant amount of traffic makes this movement to access I-90 eastbound, because there is not an eastbound ramp to I-90 in Factoria. This movement creates a bottleneck along SE 38th Street, and on 150th Avenue SE. Under the 2030 Modified Land Use alternative, both of these intersections are expected to operate at LOS F during the PM peak hour.



Channelization improvements on all legs and dual turn lanes to the I-90 Onramp are recommended at this intersection.

At SE 37th Street, the following improvements are recommended:

- East leg - Add dual WB left turns, add additional EB thru lane. Include new sidewalk on south side.
- West leg – Widen I-90 offramp and stripe as a left turn, thru lane, and dual right turn lanes.
- North leg – Extend the SB left turn lane to a total of 300' in length and phase as protected / permissive; Extend planned third SB lane to the intersection of SE 37th Street / 150th Ave SE.
- South leg – Extend the SB right turn lane at SE 38th Street to the north to SE 37th Street.

- Run split signal phasing for the east and west legs.

In addition, it is recommended to provide dual EB left turn lanes and a signal at the intersection of SE 37th Street and the I-90 onramp. The ramp itself would need to be widened to receive the dual left turns from SE 37th Street.

These improvements would significantly improve the LOS and delay at the intersection under the two 2030 alternatives for both AM and PM peak hours as shown in **Exhibit 26**.

No other improvements are recommended at this time for the intersection of 150th Avenue SE at SE 38th Street (Intersection 174), as this intersection is already built out.

Ultimately, a new roadway may be needed to serve this part of Eastgate to better serve both the intersections of SE 37th Street and SE 38th Street. Perteet examined the potential for closing the east leg of the intersection at 150th Avenue SE/SE 37th Street, and reconfiguring SE 38th Street so that it ties directly to SE 37th Street and the I-90 eastbound onramp. These improvements would offer a significant improvement to the LOS and delay at both intersections during both the AM and PM peak periods for both 2030 alternatives. This improvement would require right-of-way within the Eastgate Shopping Center, but could be conducted as part of a redevelopment project. A new road connection would allow an opportunity to create a more direct connection for the Mountains to Sound Greenway (between the west and east sides of 150th Avenue SE), with less traffic conflicts. The City did not recommend forwarding this project for further analysis at this time, due to its likely high costs and impacts.

Planning Level Opinion of Cost

The total estimated cost (including right-of-way) for roadway widening (east, west and south legs of intersection), channelization improvements, new sidewalk on the south side of SE 37th Street, widening of the eastbound onramp to I-90 and new signal is approximately \$4.0 million (2009 dollars). The cost breakdown is shown below, and more detailed information is included in **Appendix B**.

150th Ave SE / SE 37th Street Improvements	Planning Level Opinion of Cost
Design	\$400,000
Right-of-Way	\$1,432,000
Construction	\$2,662,200
TOTAL	\$4,494,200

Exhibit 26: Intersection 227 – Mitigated LOS and Queue Lengths

Intersection	Overall LOS	Overall Delay	Approach	LOS	Delay (seconds)	50 TH Queue (feet)	95 TH Queue (feet)
2030 AM Original Land Use	E	74.9	EB WB NB SB	C D F B	24.9 37.3 131.0 12.4	162' 34' 435' 51'	220' 74' 562' 74'
2030 AM Original Land Use *with Project	C	24.7	EB WB NB SB	C D C B	27.2 37.8 26.4 10.5	202' 0' 322' 38'	302' 23' 405' 55'
2030 AM Modified Land Use	E	79.9	EB WB NB SB	C D F B	31.4 38.6 143.1 13.4	214' 50' 452' 52'	308' 99' 580' 78'
2030 AM Modified Land Use *with Project	C	28.7	EB WB NB SB	C D C B	30.5 43.2 31.2 11.9	246' 28' 346' 42'	372' 55' 435' 59'
2030 PM Original Land Use	E	65.7	EB WB NB SB	F E C D	146.5 71.0 29.5 52.5	433' 139' 215' 652'	637' 275' 307' 790'
2030 PM Original Land Use *with Project	C	25.8	EB WB NB SB	D C C B	41.5 36.2 25.6 20.0	176' 63' 229' 335'	266' 98' 298' 394'
2030 PM Modified Land Use	F	93.0	EB WB NB SB	F F D E	207.4 84.2 41.1 75.9	544' 162' 258' 740'	757' 303' 383' 878'
2030 PM Modified Land Use *with Project	C	29.9	EB WB NB SB	D C C C	45.1 26.0 30.4 24.2	218' 0' 275' 385'	336' 85' 376' 451'

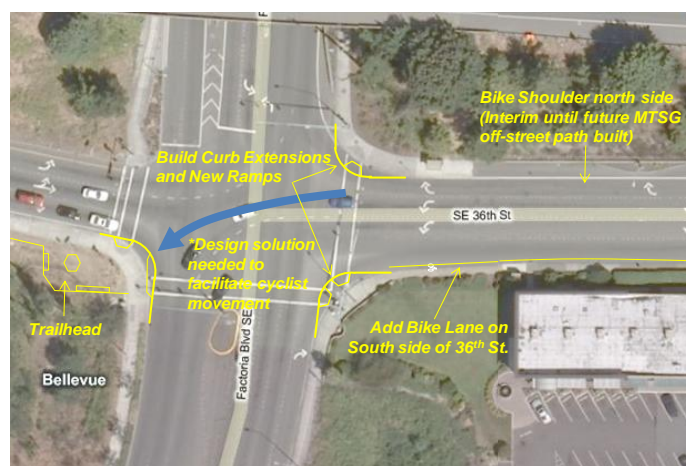
Factoria Boulevard / SE 36th Street (Intersection 204): This intersection operates the most poorly of all intersections analyzed for the various scenarios. It operates at a LOS F during both the AM and PM peak hours for the two 2030 alternatives. The worst condition is during the PM peak hour for the 2030 Modified alternative, where the average delay is 120.5 seconds. All of the individual approaches operate at either LOS E or F for the two 2030 alternatives. This intersection is already fully built out for general automobile capacity, and there are not any improvements that could be made to the intersection without severely impacting the pedestrian and bicycle environment. The primary issues associated with this intersection include the short distance between it and the intersection of SE Eastgate Way/Factoria Boulevard to the north, the high traffic demand associated with the ramps to/from I-90, and the lack of additional thru streets to connect across I-90, or to the west.

Ultimately, an additional north-south road east of Factoria Boulevard, across I-90 to connect Eastgate Way and SE 36th Street, and the adjacent land uses, would help to reduce congestion at this intersection. However, because of the terrain (i.e., both Eastgate Way and SE 36th Street are at the same approximate grade as I-90), it would be very difficult, if not impossible, to construct a new road across I-90 at this location.

In addition, the eastbound offramp from I-90 has a choke point where it passes under the NB I-405 to EB I-90 ramp. The choke point has only about 14' of lane width because of the restriction from the adjacent trail and overpass structure. During the AM and PM peaks, the traffic can easily back up to the I-90 mainline, and triggers safety concerns. To alleviate the congestion, the choke point should be widened to two lanes and extend 200' to 300' west of the choke point.

Because of the limited opportunities for capacity related improvements at the intersection, only non-motorized improvements are recommended for this intersection. In addition, new roadway grid improvements east of Richards Road can help to reduce vehicular impacts on Richards Road and Factoria Boulevard (See section below).

A primary concern is pedestrian and bicycle access and safety across Factoria Boulevard at SE 36th Street. Pedestrian safety can be improved by building curb extensions to reduce the pedestrian crossing distance across both Factoria Boulevard, and SE 36th Street, and slow down turning vehicles. Curb extensions should be added to the northeast, southeast, and southwest corners of the intersection. Today, the I-90 (Mountains to Sound) Trail ends at the southwest corner of Factoria Boulevard at SE 36th Street. The City is planning to widen the trail where it meets the sidewalk adjacent the I-90 offramp, and construct a



Curb Extensions can improve pedestrian safety, while bicycle design features can improve bicycle safety across the intersection.

trailhead at this corner. The widened trail will help to reduce conflicts between bicyclists and pedestrians in this area.

A current issue for bicyclists traveling westbound on SE 36th Street is that they have difficulty maneuvering to the I-90 trail on the west side of Factoria Boulevard.

* *Cyclist movement at intersections* - During the preliminary screening analysis process, staff concern was expressed over facilitating bicycle movements across signalized intersections in the study area. It was noted that bicyclists have special types of problems traveling through intersections, since they must operate their bikes as vehicles, but they are smaller and more vulnerable than the other vehicles. At intersections, it is particularly important that bicyclists be visible to both motorists and pedestrians. Bellevue already implements where feasible detection loop detectors for bikes at the stop bar, and these will continue to be an important design feature. Design elements that have been used in other cities (some more commonly than others) to improve cyclists' visibility at intersections include:

- Bike lanes that are located appropriately in relation to the vehicle turn lanes,
- Lead signal indicators (which provide a head-start and allow bicycles to clear the intersection ahead of motor vehicle traffic),
- Bicycle stop bars (which provide similar advantages as the lead signal indicators),
- Protected phases at signals (which separates right and left turning vehicle movements from conflicting through bicycle movements),
- Elephant's feet crossing for bicyclists crossing intersections where feasible,
- Shared lane markings or colored bike lanes across intersections, and
- Bike boxes, which require a bike lane leading to the intersection.

Much additional engineering and design will be needed in determining the most optimal means of facilitating cyclist movements across intersections in the study area.

Planning Level Opinion of Cost

The total estimated cost for the curb extensions and ramps, and bicycle improvements is approximately \$221,000 (2009 dollars). Bicycle improvements assumed associated costs with striping or painting through the intersection, and adding the bike facilities along SE 36th Street, from the intersection to 100' eastward. The cost breakdown is shown below and more detailed information is included in **Appendix B**.

Factoria Blvd. / SE 36 th Street Improvements	Planning Level Opinion of Cost
Design	\$29,000
Right-of-Way	\$0
Construction	\$191,700
TOTAL	\$220,700

New Street Grid East of Richards

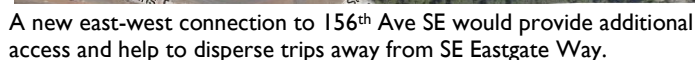
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Avenue SE, the grid network would be improved. There is an existing right-of-way that extends partially to the east that could be used. This connection also would improve access to the HOV ramps at 142nd Avenue SE, and to the freeway ramps at 148th / 150th Avenues NE. Another roadway improvement would extend 136th Avenue SE southward to link with SE 32nd Street. This would improve connectivity to Kamber Road. Because of steep terrains, it would be difficult to extend 136th Avenue SE south of SE 32nd Street to Eastgate Way. These recommended road extensions should include non-motorized facilities (sidewalks and bike lanes) to improve non-motorized access from the Eastgate Transit Center to existing and future commercial uses in TAZ 114. In addition, they could be connected to a future non-motorized trail system that connects across I-90 as described later in this report.

The total estimated cost (including right-of-way) for the new roads is approximately \$16.8 million (2009 dollars). The improvements assumed all roads to be three lanes (includes center turn lane), bike lanes and sidewalks both sides of each road. The cost breakdown is shown below, and more detailed information is included in **Appendix B**.

New Street Grid Improvements (east of Richards Road)	Planning Level Opinion of Cost
Design	\$1,645,000
Right-of-Way	\$4,173,000
Construction	\$10,962,000
TOTAL	\$16,780,000

Avenue SE: Today, businesses located east of 156th Avenue SE, north of Eastgate Way (TAZ 122) have limited access points, primarily 158th Avenue SE or 160th Avenue SE. Both of these roads only connect to Eastgate Way, thus all traffic accessing this business area is funneled to Eastgate Way. This adds to congestion at the intersections along Eastgate Way, including 156th Avenue SE/Eastgate Way (Intersection 86), and 150th Avenue SE/Eastgate Way (Intersection 101). The City is considering additional office and multi-family uses within TAZ 122. In addition, the City is developing the future Eastgate Park within this TAZ. As these additional uses are developed in the future, this



situation will be worsened. It is recommended that a future east-west road be considered to provide access from within TAZ 122 directly to 156th Avenue SE. This would provide capacity for internal circulation, and additional access points to distribute traffic to other roads away from Eastgate Way. Two potential options were examined, including Option A, which provides an extension of the Eastgate Park access road, and Option B, which extends an existing office access road.

In May 2008, the City's Parks and Community Services Department launched a multi-year master planning effort for the future Eastgate Area park (former landfill & airfield site). The master plan "preferred alternative" reflects the evolution of alternatives considered through an extensive engagement strategy with nearby residents and interest groups. During the early stages of the Parks planning process, some of the nearby residents requested that the City limit vehicle access to 160th Avenue NE. The new east-west road options are documented in the screening analysis as a strategy for addressing subarea mobility considerations that extend beyond the Eastgate Area Park boundaries. As is true of all of the concepts in the screening analysis, the new east-west road options are not intended to forecast the outcome of the Eastgate/I-90 Land Use and Transportation Project and would be vetted by the community as part of the upcoming planning effort.

Cost estimates for a new east-west road to access 156th Avenue SE were prepared for both options. The costs include right of way acquisition, and assumed a two lane road with bike lanes and sidewalks both sides. The estimated cost for Option A is \$2.4 million (2009 dollars), and

Option B is \$3.8 million (2009 dollars). The primary reason that Option B is more expensive is due to a steep slope immediately east of 156th Avenue SE where the road would connect. The cost breakdown is shown below, and more detailed information is included in **Appendix B**.

New east-west connection to 156th Ave SE	Option A - Planning Level Opinion of Cost	Option B - Planning Level Opinion of Cost
Design	\$214,000	\$383,000
Right-of-Way	\$745,000	\$886,000
Construction	\$1,424,300	\$2,547,500
TOTAL	\$2,383,300	\$3,816,500

Transit Improvements

Bellevue College: Bus routes serving Bellevue College operate a very circuitous routing through the historic core of the campus, which includes multiple speed bumps, hindering bus movements. These include routes 221, 245, 271, and 926. It is recommended that the route 245 be restructured to serve 156th Avenue SE (as described later in the report), and therefore this route would no longer serve the college. The existing route through the campus goes between a major new multi-story parking structure and a building entry which contributes heavy pedestrian crossing volumes throughout the day, delaying bus movements. It recommended that the speed bumps be cut to accommodate the width of emergency fire equipment to enable swifter response, or that the speed bumps be replaced with speed cushions that better accommodate fire trucks. These cuts can also accommodate bus traffic allowing a freer flowing movement of bus service.

In addition to the modification of speed bumps, buses could operate a more direct routing from the Eastgate Park and Ride via 142nd Avenue SE and 142nd Place SE, Snoqualmie River Road, Kelsey Creek Road to SE 24th Street (Routes 221,245,271 and 926). These roads would need to be reconstructed to accommodate buses, especially if they are used by bus rapid transit. The roads would need a 12" concrete subsurface to accommodate the weight of regularly scheduled buses. In addition, bus stops in both directions would need to be added at the intersection of Snoqualmie River Road & Kelsey Creek Road, while eliminating the stops at Tyee River Road & Kelsey Creek Road and at Landerholm Circle SE & SE 28th Street. The intersection of Snoqualmie River Road at Coal Creek Road should also be improved. Today, Snoqualmie River Road is not aligned with 142nd Avenue SE, and the north leg of 142nd Avenue SE (which serves a residential area) is too close



to Snoqualmie River Road. An additional mid-route stop along Snoqualmie River Road should be considered to provide quicker pedestrian access to housing and campus facilities. The college closes Snoqualmie River Road during evening hours, so the road would need to be opened during a longer time period to serve transit during off-peak hours.

Planning Level Opinion of Cost

The total estimated cost (including right-of-way) for reconstructing and widening the roads, improving the intersection at Snoqualmie River Road and Coal Creek Road, and new transit stops is approximately \$4.4 million (2009 dollars). The cost breakdown is shown below, and more detailed information is included in **Appendix B**.

Bellevue College Street Improvements	Planning Level Opinion of Cost
Design	\$520,000
Right-of-Way	\$427,500
Construction	\$3,462,800
TOTAL	\$4,410,300

The total potential cost savings to King County Metro, for restructuring the three routes (221, 271, and 926) is approximately \$538,000 annually, as shown in the table below. This is based on a total combined 16 minutes saved per round trip for all three routes. However, this would be a maximum cost savings, and there may be limited actual savings seen, as these travel time savings may be made up for in layover time, or improved running time.

Route	RT Travel Time Savings in Minutes	Wkdy Trips	Total Daily Minutes	Total Daily Hours	Daily Savings @ \$100 per Hr	Sat Trips	Total Daily Minutes	Total Daily Hours	Daily Savings @ \$100 per Hr	Sun Trips	Total Daily Minutes	Total Daily Hours	Daily Savings @ \$100 per Hr
221	6	66	396	6.6	\$660	56	336	5.6	\$560	30	180	3.0	\$300
271	6	83	498	8.3	\$830	51	306	5.1	\$510	30	180	3.0	\$300
926	4	40	160	2.7	\$267	0	0	0.0	\$0	0	0	0.0	\$0
				Total Daily \$1,757				Total Daily \$1,070				Total Daily \$600	
				Annualized \$447,950 255 Weekdays				Annualized \$55,640 52 Saturdays				Annualized \$34,800 58 Sundays	

Total Annualized Savings: \$538,390

Proposed Issaquah – Redmond BRT Recommendations: For successful Bus Rapid Transit (BRT) service, the route must be designed for fast and efficient operation. The fundamental elements of BRT service include travel time savings and reliability. Circuitous routing and route deviations contribute to excess travel time and exposure to issues affecting reliability. In order to serve the Eastgate Park and Ride, some out of direction travel is required. The planned BRT

The planned BRT route should be adjusted to serve the Bellevue College and Eastgate Park and Ride from the 142nd Avenue SE bridge where a pedestrian bridge provides access to the garage. A stop on the bridge would allow for direct access to the park and ride, while also allowing faster service via the direct access ramps to I-90. However, modifications to the structure may be required to accommodate new bus stops. The sidewalks (currently 6' wide) on 142nd Avenue SE at the park and ride access point need to be widened to accommodate shelters and to meet ADA requirements. This would likely require the construction of a cantilevered pedestrian structure off of the existing bridge. In addition, the BRT route should follow the above-recommended routing through the Bellevue College campus. These adjustments would provide sufficient access to the park and ride, direct access to the campus and a more direct routing within Eastgate by eliminating backtrack (out of direction) routing.

Planning Level Opinion of Cost

Costs were only developed for new transit stops on 142nd Avenue SE. The costs associated with a reconstructed roadway through the college are provided in the previous section. The total estimated cost for constructing new transit stops on each side of 142nd Avenue SE at the pedestrian bridge to the parking garage is approximately \$255,000 (2009 dollars). The cost breakdown is shown below, and more detailed information is included in **Appendix B**.

142nd Ave SE Transit Improvements	Planning Level Opinion of Cost
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Design	\$43,000
Right-of-Way	\$0
Construction	\$212,000
TOTAL	\$255,000

Service to 156th Avenue SE (Restructure Route 245): If a BRT route is implemented between Redmond and Issaquah, using the 148th Avenue corridor, King County Metro should reconsider the existing Route 245 which operates between Eastgate and the Overlake Transit Center. There would be an opportunity to restructure this route so that it serves 156th Avenue SE, rather than 148th Avenue SE. This restructure would allow for better transit access to serve commercial uses in the Eastgate/Spirit Ridge area, especially the large corporate campuses in TAZ 122.

Planning Level Opinion of Cost

With the proposed BRT route serving the 148th Avenue SE/NE corridor and Bellevue College, there would be service duplication with local Route 221 and Route 245 between Eastgate Park and Ride and Overlake Transit Center. Although the BRT route would operate in the corridor with limited stops requiring a local route overlay, there is an opportunity to provide regular local service on the 156th Avenue SE corridor while bringing service closer to the employment centers near SE Eastgate Way & 156 Ave SE. Currently, this corridor is served only in the peak direction to and from downtown Seattle.

Route 221 currently serves the 148th Avenue SE/NE corridor between Eastgate and NE 40th Street and then continues to the Overlake Transit Center. Route 245 also serves the 148th Avenue SE corridor from Eastgate to Lake Hills Boulevard where it turns east and then continues north on the 156th Avenue SE/NE corridor en-route to the Overlake Transit Center.

To provide service on the 156th Avenue SE corridor and reduce service duplication, Route 245 could easily be modified to operate on 156th Avenue SE between Lake Hills Blvd and SE Eastgate Way. With this change it would no longer serve Bellevue College. Service would continue to be provided by Route 221 and the new BRT route.

The adjusted routing would provide a four minute reduction in travel time and reduce the route length by 1.2 miles (one-way). With this savings there may be an opportunity to operate the route through the Advanta Microsoft campus in Eastgate and still maintain the current schedule and operating budget. Either way, there would be no increase in cost to adjust Route 245 as described above. If the route did not operate through the Advanta campus, there may be an annual potential cost savings to King County Metro of approximately \$391,000, as shown in the table below. This is based on the roundtrip travel times savings of 8 minutes. However, this would be a maximum cost savings, and there may be limited actual savings seen, as these travel time savings may be made up for in layover time, or improved running time.

Route	RT Travel Time Savings in Minutes	Wkdy Trips	Total Daily Min.	Total Daily Hours	Daily Savings @ \$100 per Hr	Sat Trips	Total Daily Min.	Total Daily Hrs.	Daily Savings @ \$100 per Hr.	Sun Trips	Total Daily Min.	Total Daily Hours	Daily Savings @ \$100 per Hr.
245	8	90	720	12.0	\$1,200	64	512	8.5	\$853	53	424	7.1	\$707
				Total Daily	\$1,200			Total Daily	\$853			Total Daily	\$707
				Annualized	\$306,000			Annualized	\$44,373			Annualized	\$40,987
				255 Weekdays				52 Saturdays				58 Sundays	
Total Annualized Savings: \$391,360													

Eastgate Circulator: There are three TAZs (114, 122 and 123) that have no or inadequate bus service. As described earlier, it is very difficult to operate efficient and direct transit services to the array of destinations in the Eastgate area due to the freeway and the limited street network. Recent route changes implemented by King County Metro have vastly improved transit mobility throughout the Eastside, including the Eastgate and Factoria areas. Any changes to the current route network should be considered based on the normal maturation of services and changes in demand.

The Eastgate Park and Ride serves as a strong anchor for transit services to meet and make transfer connections. This focal point is nearly in the center of the Eastgate study area and adjacent to Bellevue College, a major destination. To effectively connect the office and multi-family development areas, it is recommended that a bi-directional circulator route provide regular transit service connecting the Eastgate Park and Ride with TAZs 114, 122 and 123.

Two potential routes could be considered for a circulator route, as shown in **Exhibit 27**. Each option would operate every 10 minutes (during peak-periods). **Option 1** would route as follows: from the park and ride travel west along Eastgate Way to Richards Road, turn north and enter the TAZ 114 office development area, return south on Richards Road to SE 36th Street. From there it would travel east along the south side of I-90 following the road network that connects with the SE 35th Street tunnel to Eastgate Way (TAZ 122 and 123) and return back to the park and ride. Buses would also operate in the opposite direction to provide directness of service. Major stops would include Eastgate Park and Ride, the commercial/office area at the east end of Eastgate near Spirit Ridge, and in Factoria near Factoria Boulevard/Richards Road. Improved pedestrian connectivity and wayfinding are an important element of implementation.

Option 2 is different in that it provides service to the Factoria Mall area, and also does not provide service along SE 36th Street. It would route as follows: from the park and ride travel west along Eastgate Way to Richards Road, turn north and enter the TAZ 114 office development area, return south on Richards Road and continue to Factoria Mall, where it would make a loop within the mall. It would turn back north along Factoria Boulevard and travel east along SE Eastgate Way. At 150th Avenue SE, it would travel south, then east onto SE 37th Street through the SE 35th Street tunnel to Eastgate Way (TAZ 122 and 123) and return back to the park and ride. Buses could also operate in the opposite direction to provide directness of service.

Both options 1 and 2 could eventually provide service into areas such as the Advanta Microsoft campus if a new east-west road is built, or into the area east of Richards Road if the grid network is improved.

Planning Level Opinion of Cost

The Eastgate Circulator (Option 1 or 2) could be operated as a one-way loop or as two routes (Route A and Route B) to provide bi-directional service. Bi-directional service would offer riders more direct service per their destination from Eastgate Park and Ride as well as frequent service to allow riders to catch the first bus that is available at the park and ride.

High frequency is important to assure the success of the circulator route in order to attract and retain the commuter market. Wait times between buses for transfer connections must be kept minimal and schedule flexibility for commuters to rely on transit is essential. To provide a high level of service during the peak-periods the circulator would operate every 10 minutes while during early morning, midday and evening periods, service would operate every 15 minutes.

If the bi-directional option is selected, there would be less frequency per direction although buses would depart from Eastgate Park and Ride frequently on an alternating schedule. For example, buses during the peak-period would depart every 10 minutes with Route A leaving at :00, :20 and :40 while Route B departs in-between at :10, :30 and :50. Therefore, the individual route would be every 20 minutes. The advantage of this concept is that customers would have the option to take the route that is most direct to their destination however the disadvantage would be that they may have to wait up to 20 minutes for the route of choice and decide which side of the street to wait when returning.

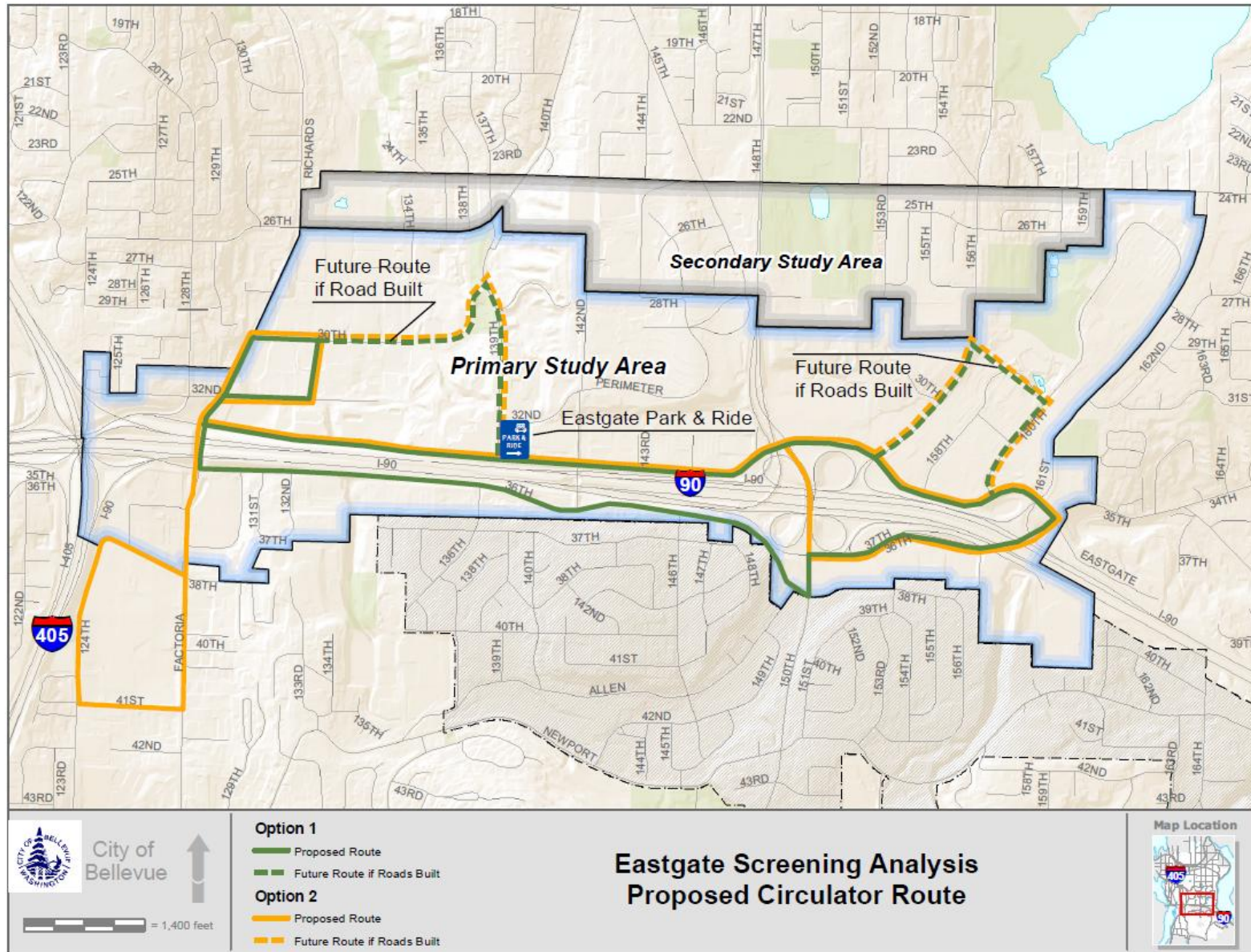
The one-way loop option has the advantage of consistency whereas every trip operates the same direction providing very frequent service. In addition, customers returning to Eastgate Park and Ride would not need to worry about which side of the street to board for the next bus on the route. The disadvantage is that for some riders the trip would be out of direction and take longer.

The maximum span of service would be weekdays from about 5:00am to 7:30pm. This should provide sufficient coverage for workers of varying shifts and allow schedule flexibility allowing commuters to stay late and not worry about “the last bus”. Providing an expanded span of service will increase ridership overall by providing the commuters with a comfort zone in order to adjust their work schedules due to unexpected events.

Currently, the regional transit agencies are charging Sound Transit a range of \$77.55 to \$122 per hour for contracted bus service. For example, the Pierce Transit operated Lakewood Sounder connector service cost \$77.55 per hour; the Pierce Transit operated Airport Link shuttle service is \$83.71 per hour; and the King County operated ST Express service is \$122 per hour. There are a number of variables that the transit agency considers when negotiating an hourly rate for service and means to recover costs. For this analysis, a rate of \$100 an hour was used to estimate operating costs. However, Bellevue may be able to contract with a private operator at a lower rate than offered by a transit agency.

To provide service from about 5:00am to 7:30pm, the estimated annual hours are the same for both options (approximately 3,650 hours for 255 weekdays). At \$100 per hour the cost would be about \$930,750 annually for either Option 1 or 2.

Exhibit 27: Recommended Eastgate Circulator Route



Transit Stops on 139th Avenue SE: On 139th Avenue SE, it appears there are no transit stops between Kamber Road and Eastgate Way. The route 921 currently uses this roadway. Transit stops should be added midway between these two roads to serve existing multi-family and office, and future infill commercial development, and especially if SE 30th Street or SE 32nd Street is extended to 139th Avenue SE.

Planning Level Opinion of Cost

On 139th Avenue SE, it appears there are no transit stops between Kamber Road and Eastgate Way to serve Route 921. An ADA compliant transit stop should be constructed on each side of 139th Avenue SE. A full transit stop with shelter and pad is estimated to cost approximately \$20,000 per stop (including design, construction and permitting). Therefore, the total cost for two new transit stops on 139th Avenue SE is estimated to be \$40,000. The City should work with existing property owners' uses, and future developers to provide convenient and safe pedestrian access to the sidewalks along 139th Avenue SE, which will improve access to the transit stops.

Transportation Demand Management: Various Transportation Demand Management (TDM) techniques can be used within the Eastgate area to reduce the use of single occupant vehicles. These include:

- Bellevue College Student/Employee Bus Pass - Campus Transport Management programs are coordinated efforts to improve transportation options and reduce trips at colleges, universities and other campus facilities. This often includes free or significantly discounted transit passes to students and sometimes staff. Comprehensive campus transportation management programs can reduce automobile trips by 10-30% and increase transit ridership 30-100%.¹
- Parking Management - Parking management can be an effective way to increase transit use. Parking management includes "parking cash out" (employees who receive free parking have the option of choosing cash or a transit subsidy instead), "unbundling" (building renters only pay for the amount of parking they actually want), and more flexible parking requirements that allow developers to supply less parking where appropriate. Parking pricing is one of the most effective ways of reducing automobile trips. Cost-based parking pricing (parking fees set to recover parking facility costs) typically increases transit ridership by 10-30%, depending on the previous level of transit ridership and the range of travel options available.²
- Marketing and User Information - Transit marketing and user information includes market surveys, improved route schedules and maps, way-finding information, and other types of information. Given adequate resources, marketing programs can often increase

¹ Victoria Transport Policy Institute – Evaluating Public Transit Benefits and Costs; April 2009; page 80

² Victoria Transport Policy Institute – Evaluating Public Transit Benefits and Costs; April 2009; page 79

use of alternative modes by 10-25% and reduce automobile use by 5-15%. About a third of the reduced automobile trips typically shift to public transit.³

VanShare - King County Metro (KCM) has been operating a “VanShare” program for several years. The purpose of VanShare is to bridge the gap between public transportation and the final destination. Basically a VanShare is a group of five or more commuters using a KCM provided van to travel between the ending point of a transit trip i.e. Eastgate Park and Ride to the employment site. An example of how VanShare would work in Eastgate: a large work site may not have regular or convenient transit service i.e. Advanta Microsoft campus. Commuters would take a bus to Eastgate Park and Ride, meet-up with similar commuters and utilize a VanShare vehicle that is garaged at the park and ride to ‘bridge-the-gap’ to complete their trip to work. Expansion of the VanShare program should be considered as a partnership with KCM. This would include the need to provide reserved parking spaces for the vehicles to stay overnight at the Eastgate Park and Ride

Planning Level Opinion of Cost

The estimated costs associated with a student / employee bus pass program can be developed based on similar programs at other college campuses. An annually revised agreement between Edmonds Community College (ECC) and Community Transit (CT) provides the EdPass program offering students and staff with a bus pass to ride CT local routes with no additional fare. The purpose of the program is to reduce congestion and parking problems at the college.

More than 3,000 students use the EdPass to ride to class. For students, the quarterly EdPass is free as the cost is covered by student fees. ECC employees have the option to purchase a quarterly pass for the price of a one-month pass. In addition, employees are offered a ‘guaranteed ride home’ taxi ride in the event they have an emergency or must unexpectedly work late night as part of the Commute Trip Reduction program.

A similar program, the U-PASS, is offered by the University of Washington that provides a pass that is valid for full fare on Community Transit, King County Metro, Sound Transit, Pierce Transit and Everett Transit. The U-PASS can also be used to apply for the cost of using Vanpool services.

The passes are not subsidized by the transit agency but are paid for fully through student fees collected by the institutions based on usage. The University of Washington (UW), also collects additional funds through parking fees. At ECC, students are not required to obtain an EdPass but the student fee is not adjusted. At the UW, students must opt in to the U-PASS program and pay a \$180 fee per quarter. The balance of the cost of the pass is funded through the parking fee program.

The costs of the passes are based on actual usage. Using CT and ECC as an example, every quarter bus drivers record, through a fare box key, all boardings of riders with the pass over a two week period. Annually, CT calculates the number of rides taken as recorded by the drivers. A transfer factor rate of 22% is applied to the total boarding count so as not to double count

³ Victoria Transport Policy Institute – Evaluating Public Transit Benefits and Costs; April 2009; page 80

riders that transfer between buses. CT and ECC negotiate a growth rate and factor that into the usage rate for the previous year to arrive at an amount the college will reimburse the transit agency for pass usage for the following year. CT invoices ECC on a quarterly basis. Currently, ECC's cost for the passes is about \$500,000 annually. This is based on the projected pass use at \$1.50 per ride (minus transfers). UW U-PASS costs are calculated in a similar manner, based on actual usage.

For the summer quarter of 2010, the Orca card will replace the EdPass and U-PASS. The Orca card will electronically record pass usage instantly. This will provide a totally accurate accounting of pass usage by replacing the reliance on drivers to record usage through the fare box. An annual reconciliation process will determine if growth is up or down and the cost to the institutions adjusted accordingly.

To initiate a similar program, Bellevue College would need to negotiate with KCM and Sound Transit (ST) to determine an agreeable usage rate. To begin this process Bellevue College would need to survey the students to determine current usage of bus service and the potential increase in students that would use the bus if free passes were provided. As with ECC and CT, a growth rate would need to be considered as well as the cost per ride due to the different fare structures between KCM and ST. Currently under the U-PASS program, the UW has separate contracts with each transit agency. However, due to Orca, one regional contract will be implemented for the pass program. A similar model could be followed by Bellevue College to engage both KCM and ST under a new BC-Pass program.

A cost estimate was not prepared for other TDM techniques identified above, as the costs associated with vanshares, marketing, and parking management would depend on the extent of participation by area employers.

Hotel Shuttle Service: Many hotels throughout the region provide their own van shuttle services to numerous destinations. This is quite common in the Southcenter area where hotels provide shuttle service to area attractions such as retail, casinos, the Amtrak station, the airport and grocery shopping. It is recommended that this type of arrangement be encouraged with the Eastgate area hotel establishments especially for the hotel expansion in TAZ 123.

Planning Level Opinion of Cost

A cost estimate was not prepared for this recommendation, as the cost would depend on the extent of participation by hotels, which is unknown.

Recommendations Related to Existing Non-Programmed Transit Projects

Transit Signal Priority: It is recommended that the City continue to pursue implementation of TSP applications described in the Bellevue Transit Plan. Implementing TSP is also recommended for the proposed Issaquah – Redmond BRT route as described in the Bus Rapid Transit Assessment and Traffic Optimization Analysis for East Bellevue report. Transit should have priority when operating via the I-90 & 142nd Avenue SE HOV ramps at the Eastgate Freeway Station. Traffic signals should be prioritized to facilitate transit turns and crossings.

Factoria Boulevard Transit Shelters: The FATS Update recommended transit shelters along Factoria Boulevard. These should be provided at all high activity stops or transfer points

Factoria Transit Service: Enhancing regular bus service to Factoria is an open ended request that needs further definition. There are four regular routes that serve Factoria and connect areas between Renton and Bellevue.

Additional Park and Ride Capacity: If Eastgate Park and Ride is full, additional parking may be in order at satellite locations. However, any expansion of satellite park & ride facilities should give priority to vanpool and carpool users.

Eastgate Way (Richards Road to 150th Ave SE) Transit Stops: Shelters should be provided at all high activity stops or transfer points.

SE 36 Street (128th Street to 150th Avenue SE) Transit Stops: Shelters should be provided at all high activity stops or transfer points

Improve one-seat transit access: King County Metro recently implemented a number of service improvements that should have provided more direct services throughout the Eastside with Eastgate and Bellevue College. Further identification of this concern is needed.

148th Avenue NE/Eastgate Way BRT /TSP: This is a valid project that should be pursued. It would likely displace KC Metro local service in the corridor to eliminate duplications.

Other Non-Motorized Improvements

In addition to the non-motorized improvements that were recommended as part of intersection capacity improvements, the following non-motorized improvement is recommended to help improve overall mobility within the area as land uses are built out.

New Non-motorized crossing over I-90:

Limited freeway crossing points for local traffic result in out-of-direction travel for many cross-freeway trips and heavy vehicular traffic at the available crossings, which can make it unpleasant for pedestrians. The existing crossings are located at SE 35th Place (the tunnel); the grade separated non-motorized crossing parallel to 148th/150th Avenues SE, SE 142nd Place SE, and at Factoria Boulevard SE / Richards Road. An additional north-south roadway serving vehicles between Richards Road and 142nd Place SE would be difficult to construct given the existing terrain (NE 36th Streets and Eastgate Way are at roughly the same grade as I-90). However, an additional non-motorized overcrossing could provide a



A new north-south non-motorized facility could connect to the future office area north of Richards Road and the Mountains to Sound Greenway and other uses south of I-90.

significant benefit to pedestrians and bicyclists by providing improved access to future growth areas, and an alternative facility away from existing congested roadways. It is recommended that a non-motorized bridge be constructed over I-90 to link the future office area east of Richards Road / SE Eastgate Way to the office and residential areas south of I-90, including SE 36th Street and the Mountains to Sound Greenway along Eastgate Way. This facility could be combined with a multi-use trail system to connect to neighborhoods south of I-90, and a future street grid north of I-90, as discussed earlier. As future development occurs on either side of the freeway, it may be feasible to provide direct connections from the bridge or trails to those buildings.

Planning Level Opinion of Cost

The total estimated cost (including right-of-way) for the bridge, ramps/stairwells to SE Eastgate Way and SE 36th Street, trails to SE 30th Street and SE 32nd Street, is approximately \$16.1 million (2009 dollars). The cost breakdown is shown below and more detailed information is included in **Appendix B**.

	Planning Level Opinion of Cost
Design	\$2,428,000
Right-of-Way	\$1,575,000
Construction	\$12,135,200
TOTAL	\$16,138,200

Appendix A

Programmed and Non-programmed Projects

Appendix B

Planning Level Cost Estimates (Roadway/Non-Motorized)